

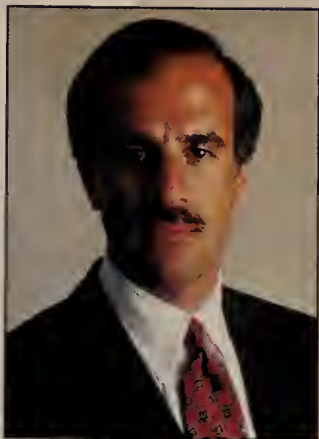
# NetworkWorld

Marketing & Advertising Quarterly Report

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# Advantage



Colin B. Ungaro

Publisher

## Testing, Testing, 1-2-3

Network World has always been committed to giving our readers objective product information critical to making the right buying decisions. That's why when research revealed that our readers were interested in server information, we were determined to deliver just that. By collaborating with PC World in the creation of a Server Test Lab network, Network World will provide our readers with the performance information they need to make the best server purchases for their own networks. The lab reinforces Network World's commitment to reader advocacy and augments our extensive

test/review program, which is slated to publish a review in every issue in 1996.

The Server Test Lab is located in Houston, Texas and its network will comprise 16 computers, each with four adapters for a total of 64 virtual clients. The network will test workgroup and enterprise servers as both file and application servers using NetWare 4.1 and Windows NT 3.51 operating systems. File servers will have to perform the most file intensive functions of real applications. Lotus Notes and the Oracle database engine will be utilized for application server testing. Servers will be tested under the most demanding conditions and will be judged for the speed of their performance as well as how many users they can support. Servers are put through the paces and Network World will report the results in our monthly server test series which will debut in February, 1996.

Bill Rinko-Gay will manage the Server Test Lab, bringing over 15 years of experience in computer hardware and software development and testing to the project. Prior to joining Network World's Server Test Lab, Rinko-Gay managed the Desktop Competitive Analysis Lab at Compaq Computers.

If you'd like to submit your server for testing consideration, please contact Bill at (713) 376-8771 or via e-mail at bill\_rinko-gay@pcworld.com. If you'd like to see how your competition measures up, consult the monthly server test series in Network World!

Reviews are scheduled to run in the following issues of Network World:

February 19	June 24	September 23
March 18	July 22	October 28
April 22	August 19	November 25
May 27		

## Get the Facts.

### A Revealing Look at Network World's Readership!

When you advertise in Network World, you reach not only the biggest buyers of network and computing products and services, but all kinds of buyers.

That's because all Network World readers are the same, but different. All buyers, but all different types of buyers.

Network World conducted a psychographic profile of its readers to explore the complex and evolving role of the Network IS professional. The study revealed that all Network IS professionals have responsibility for networks within their organizations; however, how they approach this function is determined by such factors as the size of the organization, current technologies installed, reporting structure and more.

Understanding the characteristics of each group, what they have in common and how it relates to the buying process is the key to reaching this audience on their own "track."

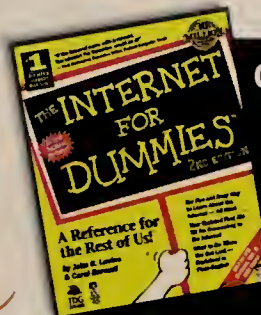
Network World readers share very similar attitudes about certain aspects of information technology. The majority of Network World readers:

- Consider productivity gains a critical decision criteria when evaluating new technologies and products.
- Have responsibility for both networking and computing.
- Report that their organizations are dependent on their networks.
- Highly value word of mouth as an extremely important information source when evaluating new products and technologies.

Yet when it comes to computing architectures and willingness to try new technologies, key differences among Network World readers begin to take shape. Four groups — each with important, distinct buying characteristics — emerge. They have different technology adoption rates, different size organizations, different end-user goals, but they are all

continued inside ►

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## NetworkWorld

### 1996 Editorial Calendar

January — June

Subject to change.

✍ = Scheduled topic to be announced quarterly

Ad Close: ► R.O.P.: 12 days prior to issue date ► Marketplace: 12 days prior to issue date ► Recruitment: 12 days prior to issue date

General Features Close: ► 10 weeks prior to issue date ► 16 weeks prior to issue date for Buyer's Guides

EDITORIAL						Special Sections Bonus Distribution Marketing Extras		
Issue Date Ad Close	Special Features	Buyer's Guides	Tests/Reviews	Technology Update	Special Focus			
Dec 25/ Jan 1 Dec 13	Power Players Issue: NW 200 Technology Planning Survey User Excellence Awards Winners							Reader Service
Jan 8 Dec 27		Document Management	✍	✍	WAN		MacWorld Expo, San Francisco	
Jan 15 Jan 3	✍			✍	Applications	COLLABORATION Tools for teams: Five hot products that make teams more effective. Ad Close: Dec 15		Reader Service
Jan 22 Jan 10	Moving to Client/Server Messaging ComNet Show Planning Guide		✍	✍	LAN			
Jan 29 Jan 17		Internet Outsourcers	✍	✍		LAN World	ComNet, Washington, DC	Reader Service
Feb 5 Jan 24	Ready to Roll: Quarterly Product Status Update		✍	✍	WAN			
Feb 12 Jan 31		High-end Hubs	✍	✍		LAN World	Networks Expo, Boston UniForum, San Francisco	Reader Service
Feb 19 Feb 7	✍		Server Review Series	✍	Unplugged	Capitalizing on the Internet Ad Close: Jan 19	Network World Unplugged: The Mobile and Remote Access Expo, San Jose	Reader Service
Feb 26 Feb 14	✍		✍	✍	LAN: Alternative Network Operating Systems			
Mar 4 Feb 21	Special Switching Issue		✍	✍		LAN World		Reader Service
Mar 11 Feb 28	✍		✍	✍	WAN: The Hidden Costs of Telecommuting	COLLABORATION The dating game: Synchronizing calendars across the wide area. Ad Close: Feb 9	CeBIT, Germany	Reader Service
Mar 18 Mar 6	✍		Server Review Series	✍	Applications			
Mar 25 Mar 13	NetWorld+Interop Show Planning Guide		High-end Hubs	✍	LAN		Database & Client/Server World, Boston	HARVEY AD STUDY
Apr 1 Mar 20		Low-end Hubs	✍	✍		LAN World	NetWorld + Interop, Las Vegas	Reader Service
Apr 8 Mar 27	Annual Network Management Survey		✍	✍	WAN		Enterprise Computing Solutions, Atlanta	
Apr 15 Apr 3	✍		✍	✍	Applications: Managing Workgroup Databases		DB Expo, San Francisco	
Apr 22 Apr 10	✍		Server Review Series	✍		LAN World		Reader Service
Apr 29 Apr 17	10-Year Anniversary Issue	Internet Firewalls	✍	✍	LAN		Internet World, San Jose	Reader Service
May 6 Apr 24	Ready to Roll: Quarterly Product Status Update		✍	✍	WAN			
May 13 May 1	✍	Low-end Hubs		✍	Applications			
May 20 May 8	Distributed Network Management: What's in it for You?			✍	LAN	COLLABORATION Meeting makers: A buyer's guide to electronic meeting aids. Ad Close: Apr 19		Reader Service
May 27 May 15	✍		Server Review Series	✍		LAN World		Reader Service
June 3 May 22		LAN Switches	✍	✍	WAN		Comdex Spring/Windows World, Chicago	
June 10 May 29	Annual Budget Survey		✍	✍	Applications			HARVEY AD STUDY
June 17 June 5		Frame Relay Services	✍	✍		LAN World	PC Expo, New York	Reader Service
June 24 June 12	✍		Server Review Series	✍	LAN		Supercomm/ICA Expo, Dallas	Reader Service



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# NetworkWorld

THE NEWSWEEKLY OF ENTERPRISE NETWORK COMPUTING



Notes Mail goes after cc:Mail seats.  
Page 8.

## Cough it up for ATM

*ABR upgrades aren't cheap.*

By Jim Duffy and Jodi Cohen

ATM customers better have some Christmas money socked away because they'll have to upgrade their switches to support hot new services coming down the pike.

Asynchronous Transfer Mode switch vendors say some users will have to replace switches to take advantage of available bit rate (ABR) services, one of the most appealing benefits of ATM. More fortunate buyers will be able to hang on to their current switches, even though they will still have to replace interface cards.

Either way, it could cost users thousands of dollars.

"The fact that the ATM equipment is obsolete now, well, that's the price you pay as an

### ABR ADVICE

Thinking about buying an ATM switch that supports available bit rate (ABR) service or upgrading your current box?

- ▶ If you haven't bought the switch yet but the box you like doesn't support ABR, negotiate upgrade costs into the initial purchase price.
- ▶ If you have a switch that needs to be upgraded, figure out what network conditions ABR will be used under and determine whether the upgrade can be cost-justified.
- ▶ Either way, consider holding off purchases until next year when more ABR-aware applications emerge.

early adopter," said Allen Robel, senior network planner at Indiana University in Bloomington.

Robel, who is implementing  
*See ATM, page 13*

## Ethernet in overdrive

*Compaq, 3Com and Sun pitching 1G bit/sec Ethernet as backbone alternative.*

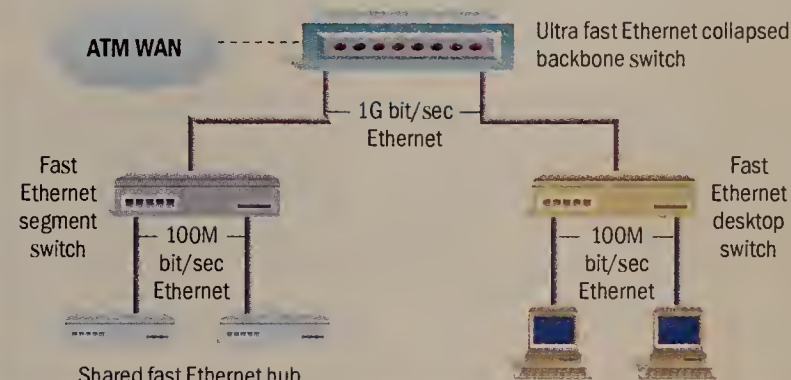
By Jodi Cohen

There were those that thought Ethernet would never break the 10M bit/sec barrier, but then came 100M bit/sec fast Ethernet. Now a number of vendors are pushing for a new technology that would offer another tenfold performance boost.

Gigabit Ethernet, which has been proposed to the IEEE as a local network standard, would support 1G bit/sec data rates and serve as a backbone option for fast Ethernet environments. The technology is being backed

### UNIVERSAL ETHERNET

Compaq is backing a new 1G bit/sec technology, dubbed ultra fast Ethernet, that would be used to concentrate traffic from workgroup and departmental LANs based on fast Ethernet segment and desktop switches.



by Compaq Computer Corp., 3Com Corp. and Sun Microsystems, Inc.

John McHale, former chief executive officer of Compaq acquisition NetWorth, Inc. and

now a Compaq corporate vice president, said the technology would make Ethernet viable from the desktop all the way across LAN backbones.

*See Ethernet, page 12*

### Management strategies

## Outsourcing mania

*Should you take the leap?*

By Charles Bruno

When officials at upstart DirecTV, Inc. launched their direct satellite television service, the company farmed out its billing and data center management operations to Digital Equipment Corp. for an undisclosed sum.

Likewise, Arkwright Mutual Insurance Co. jobbed out a major WAN upgrade rather than dump the work on its tiny IS staff. And software giant Microsoft Corp. has embraced outsourcing as a core business practice, contracting out everything

*Continued on page 42*



Microsoft CFO  
Michael Brown says,  
"Outsourcing is all  
about economies of  
scale."

## Cisco flicks switch up to 10G bit/sec

By Jim Duffy

Billerica, Mass.

Cisco Systems, Inc. next year plans to unveil an Asynchronous Transfer Mode backbone and WAN access device that boasts five times the switching capacity of the company's current top-of-the-line switch.

The new switch, which Cisco officials called the LightStream

*See Cisco, page 14*

ATM switch leader Fore to snap  
up switching hub vendor Alantec.  
See page 10.

Grab more ATM info on-line, including:

- A primer on ABR specs
- A look at P-NNI
- A list of questions to ask ATM vendors

Link to <http://www.nwfusion.com>.  
Select News+ then Front Page.



## Microsoft trains WinNT and SQL Server for Internet duty

*Company to target Web with SQL Server price cut.*

By Barb Cole and Kevin Fogarty

Microsoft Corp. next month will lower the price of its SQL Server database to make it more attractive as a platform for World-Wide Web sites, sources said.

The company is playing catch-up to other database makers, which have already wrapped up their Web strategies with new licensing deals and technology bundles.

Database licenses are typically sold on a per-user basis, and on the Web every access or hit is considered a user. A traditional database pricing scheme quickly puts Web databases out of the financial reach of customers setting up Web sites, many of which are designed to handle 150,000 hits a day, analysts said. As a result, traditional database licenses are too expensive and inappropriate for Web sites, said Gary Voth, group product manager for SQL Server marketing

*See Web pricing, page 12*

*NT to use 'Net as a WAN for Windows workstations.*

By Kevin Fogarty

Redmond, Wash.

At his Comdex/Fall '95 keynote last month, Bill Gates showed Microsoft Office users effortlessly sharing files and information over the Internet.

Like many promises made in speeches, this plan for groupware on the cheap seemed pretty distant. But it turns out that at

*See NT, page 13*



The good, the bad and the complete waste of bandwidth. Page 36.



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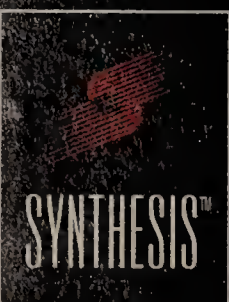
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**This Week**



**News+**

**The Front Page:**

- Wise-up to the potential security problems that could crop up bringing TCP/IP to Windows.
- Do a data dump on available bit rate ATM service.
- Sew up a thread on gigabit Ethernet, in Local Networks.

**The Technical Sections:**

- Confused about copyright issues in cyberspace? We'll straighten you out, in Electronic Commerce.
- Iso-Ethernet isn't a cold version of the venerable LAN. Find out about it, in Local Networks.



**Forum**

**Your side:** Outsourcing — a way to help out overburdened MIS staffers or the beginning of staff cutbacks? Discuss in Topic 27, in Help Desk.

**Other areas**

- **Professional Development:** New seminars.
- **DirectConnect:** Download demo software.
- **Network World Central:** Get in touch with us.

**this week's pick**

Forget printers and routers. This week, you want to do remote monitoring of Santa's sleigh. Tracking Santa provides a graphical interface for Windows clients that issues periodic probes to find out whether users have been naughty or nice. Pricing starts at \$3.99 per license. The software is available immediately, at <http://www.cyberhighway.net/~citius/sexe.html>.

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**MARKET LINE:** For details about future editorial projects, call (508) 820-7557.

**News**

- 6 Start-up led by ex-IBMers debuts** client/server net performance measurement tool.
- 6 Protesters fail to reverse move** to ban cybersmut.
- 8 Lotus boosts cc:Mail-to-Notes** migration.
- 10 ARDIS revamps wireless messaging** pricing structure.
- 10 SABRE, Worldview partner to launch** Web-based travel service.
- 10 Fore makes bid for LAN switch** vendor Alantec.
- 12 NYNEX aims to spread ISDN** throughout Northeast.
- 14 Cisco unveils extensions** to its router line.
- 16 Sprint finally gets over FCC** hurdle to seal deal with French, German carriers.

**WANs & Internetworking**

- 17 Newbridge had** 'Net access in mind but got remote traffic onto the corporate LAN in the bargain.

**SPECIAL FOCUS**  
**Call center management**

The ABCs of ACD alternatives from RBOCs and third-party software firms. See page 22.

**Local Networks**

- 23 3Com technology for Ethernet LANs** keeps pace with ATM capabilities.
- 23 HP bolsters its LAN analyzer line** with tools for FDDI, token-ring and Ethernet networks.
- 23 SCO plans to introduce updated** versions of its OpenServer and UnixWare operating systems next year.

**Client/Server Applications**

- 25 Cincom provides apps development,** database and workflow tools in an all-in-one package.
- 25 Platinum explains the meaning of its** POEMS management plan.
- 25 MADMan MIB specifications** for E-mail management may face some changes.



Steve Kille, IETF MADMan working group chairman

**Electronic Commerce**

- 33 Copyright tracker says snail mail** is out and the Internet is in.

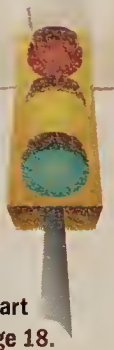
**Technology Update**

- 35 The ANSI network/channel interface** standard supports speeds that reach beyond the gigabit-per-second range.

**NetworkWorld's Mission:** To provide news and analysis that help network IS professionals deliver the network computing infrastructure and distributed applications required to meet evolving business needs.

**Ready to roll**

Here today or tomorrow? Use our product shipping chart to catch up. See page 18.



**Management Strategies**

- 43 Zero responsibility syndrome** can be cured through full responsibility management pill.
- 43 Management Data On-line:** Web sites that could make your job easier.

**Features**

How to build an effective Web site. Or: The Good, The Bad and The Complete Waste of Bandwidth. **Page 36.**



**Legalize your licenses.** We check out two software metering applications that help keep smaller NetWare networks in compliance. **Page 39.**

**Opinions**

- 17 Daniel Briere and Christine Heckart** look back at frame relay releases over the last year.
- 24 Dave Kearns** examines Novell's connectivity tools.
- 24 Skip MacAskill and Melinda Le Baron** pass along their holiday greetings.
- 26 Marc Myers** identifies where data warehouses do and don't belong.
- 28 Editorial:** The statistical reality.
- 28 John R. Rymer** sees a new era emerging for network managers with Taligent's passing.
- 33 Mark Gibbs** delivers a letter to Bill Gates.
- 58 Back to Reality:** Network managers should plan now to avert career disaster.
- 58 CyberSpeak:** What do you think of Cabletron's plan to buy SMC's switching business?

**Network Help Desk.** Page 35.

**In-Box.** Letters from our readers. Page 29.

**Editorial and advertiser indexes.** Page 57.



## News briefs, December 18, 1995

**Coming soon: Bill TV and Baby '96**

■ It was a busy week for Bill Gates; Microsoft Corp.'s chief executive officer and chairman prepared for new roles as a father and television mogul. Rumors of a deal with NBC culminated in a partnership and demonstration of their pending products: a 24-hour cable-based news channel and an Internet-based news service. Microsoft is paying \$220 million over five years for half of NBC's cable interests, being renamed MSNBC Cable. MSNBC Online will be available through The Microsoft Network on-line service. The new Microsoft-NBC ventures will debut in the next six months; as for the baby, he or she is scheduled for arrival in late May.

**Smaller firms get shot at PCS**

■ The Federal Communications Commission's second auction of broadband personal communications services (PCS) licenses finally begins today, more than a year after the first auction began. Some 254 relatively small companies and individuals will compete for 493 metro-area licenses in the so-called PCS Entrepreneur's Block. AT&T, Sprint Corp. and regional Bell operating companies dominated the first auction of larger regional licenses. Today's auction start had been repeatedly delayed following court fights over who was eligible to bid.

**Legato goes Xmas shopping**

■ Legato Systems, Inc. last week announced that it will acquire the combined operations of Innovus Technologies, Inc. and Innovus, Inc., makers of storage management software, for \$6.5 million. The deal is expected to close in January.

**The itsy-bitsy SuperSpider**

■ Digital Equipment Corp. last week released a beta version of Internet search-and-retrieval software it hopes will eventually become widely used on the World-Wide Web. Called SuperSpider, the software purportedly can comb through 2.5 million pages on the Web per day, indexing every word of text. Users interested in testing the software are welcome to download it from Digital's Web site at <http://www.altavista.digital.com>.

**Taking a Web hit**

■ WebTrends, a traffic tracking program for World-Wide Web sites, is in beta test for a scheduled January release from e.g. Software of Portland, Ore. The program works with any Web server — local or remote — that logs user hits. WebTrends generates detailed reports and graphs that identify a site's most popular pages, downloads and usage times, as well as user data such as frequency of contact, geographical source (by IP address) and other demographics. The prerelease version is available at <http://www.egsoftware.com>.

**Master of LAN disasters**

■ Companies that have distributed LANs now can look to Comdisco Recovery Services for the same kind of disaster recovery services that it has been offering for years to mainframe and mid-range computer sites. Under the company's Advanced Recovery Services offering, Comdisco will back up servers and other LAN resources. It will cost \$500 per month to back up 1 GB of data — with additional fees, depending on how far it is between backup sites.

**Network World seminar alert**

■ Two new NW seminars — Switching and the Virtual LAN and Remote LAN Access — begin a tour of 10 cities on Jan. 22, visiting Boston first and ending in Washington, D.C. on March 15. The one-day seminars run on back-to-back days and can be attended separately or together. Consultant Hank Allard leads the remote LAN access seminar, while consultant and frequent NW contributor John McConnell will host the other. Attend either seminar for \$395, or attend both for \$690. For more information, call (800) 643-4668.

# New tool weighs impact of changes on networks

*Gauges performance hit from client/server applications.*

By Michael Cooney

Raleigh, N.C.

Start-up Ganymede Software, Inc., this week will announce its first product — a performance tool that lets users test advanced applications before they deploy them to determine the impact the programs will have on their enterprise nets.

The company is rolling out Chariot, a software tool that lets users evaluate the performance of switches, routers or adapters and then simulate the traffic generated by client/server applications in TCP/IP or Advanced Program-to-Program Communication (APPC) environments.

"The client/server world does not have the tools to measure network performance, and consequently performance problems can go unchecked," said Steve Joyce, vice president of marketing for Ganymede. "Chariot lets users stress test the network, isolate problems and provide an accurate, real-time measurement of performance."

Chariot consists of an OS/2-based console application running on any workstation, and agent software that runs on OS/2 or Windows 95 clients. Agent code for MVS, IBM Application System/400, Novell, Inc.'s NetWare and Unix workstations is expected by next May.

From the console, users can build test applications, or scripts, which are then distributed to the agents. Chariot comes with script templates or users can build their own, Joyce said.

Each agent can then run the script among multiple other agents or to the console. After a test is completed, the agent sends the data back to the console, which compiles and presents the results.

"The test measures response time and throughput between agents and the performance of net devices in between those agents," Joyce said.

Beta users so far have given Chariot high grades. "Chariot shows us real application traffic that looks very close to real production network traffic," said Nancy Agosta, director of network testing services at the North Carolina Microelectronics, Communications and Networking Center. "We've found that cell and frame generators do not provide an accurate representation of net performance."

Agosta is currently running an Asynchronous Transfer Mode test and is looking to measure the performance interactions of LAN emulation and TCP/IP encapsulation environments.

Jim Gray, an IBM Fellow in the Network Software Division, said IBM chose to deploy Chariot because it accurately reflected a variety of workloads

found in actual production networks.

"It let us run elaborate test patterns across a variety of networks and control it all from one console," Graysaid.

Due next year is a port of the Chariot console product to NetView for AIX and Hewlett-Packard Co.'s OpenView packages so test results can be shown on one integrated screen.

Four ex-IBMers formed Ganymede Software in March with the idea of building network performance and management products that would help users more easily measure the performance of their networked devices (NW, Mar. 15, page 1).

Chariot will be available by the end of January. Pricing starts at \$11,000.

©Ganymede Software: (919) 558-1138

*"The test measures response time and throughput between agents and the performance of net devices in between those agents," Steve Joyce said.*

MORE ONLINE

See how servers perform in client/server environments. Link to <http://www.nwfusion.com>. Select News+ then Client/Server Applications.

NetworkWorld  
*Fusion*

## Cybersmut law protests fail

By Ellen Messmer

and David Rohde

Washington, D.C.

Network managers and Internet users mobilized to beat back a proposal to ban "indecent" in cyberspace, but a House-Senate conference committee working on a telecommunications reform bill appeared to ignore them.

And late last week, private meetings among the committee members led to tentative agreements on how regional Bell operating companies would be allowed to enter the long-distance business. The same meeting led to an agreement that could ultimately ban dirty words and images on-line.

Washington insiders cautioned that the apparent agreements on cybersmut regulation and RBOC long-distance entry have not been subject to a vote of the full House-Senate panel.

Early last week, a wave of protests hit Capitol Hill over a recent decision by the 33 House conferees to essentially accept a Senate-passed provision punishing those who make "indecent" material available to minors with a \$100,000 fine and a two-year jail term. Under the provision, service providers would also be held responsible, unless they took special efforts to regulate content.

But even now there is still time for changes because an overall bill has not emerged from the conference committee. Late last week, the White House renewed its concerns over the entire bill, and more than a third of the full Senate — a veto-proof cohort — reportedly is ready to vote against any bill that does not give the Department of Justice a role in determining whether the RBOCs deserve a shot at the long-distance market.

Long-distance carriers and  
See Cybersmut, page 16

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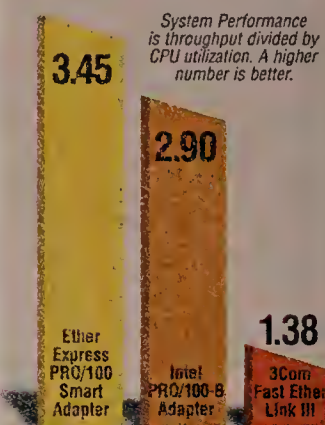
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# Lotus unveils lower priced Notes clients

Users of cc:Mail are lured to make the migration.

By Carol Sliwa  
Cambridge, Mass.

All the talk at Lotus Development Corp.'s glitzy mid-December press briefing revolved around new low-cost Notes clients and Internet links. So where does that leave the legions of cc:Mail users?

They know they are being nudged to at least consider a migration to Notes. After all, the new Notes Mail client unveiled last Wednesday, featuring the InterNotes Web Navigator, will be priced at \$55.

And the price of the Notes Desktop client, which allows users to run custom applications, has been slashed from \$155 to \$69. A full Notes client remains at \$275.

For cc:Mail users, the price cut is one more push. If cc:Mail users want to move to client/server, they will have to install a Notes 4 server anyway, getting them halfway to a Notes environment. The \$55 Notes Mail talks to the same back-end as cc:Mail and has an identical interface, making for an easy swap, company officials hope.

Some users are ready to take the Lotus bait. "I've been interested in moving some things to Notes, and this makes it even more attractive," said Marty Konrad, telecommunications manager for Atlantic Container Line of South Plainfield, N.J.

Konrad can understand why Lotus would want him to consider Notes. Electronic-mail

## NOTES PRICE REDUX

Notes clients	Old	New
Notes Mail	NA	\$55
Notes Desktop	\$155	\$69
Notes	\$275	\$275
Notes server	Old	New
Single processor	\$275	\$495
Multiprocessor	NA	\$2,295
NA = Not applicable		

Above prices are for one license. All costs are estimated retail prices when purchased through volume program.

products are plentiful, and administrators can switch from one to another with relative ease.

"But once you go to Notes, you're pretty much locked in so it's going to be hard to change," Konrad said. "Any software manufacturer would like to make you make more of a commitment. They're trying to put the little hooks in there that keep you attached to their particular applications. That's business, and everyone's doing it."

In Konrad's case, he doesn't mind. All of his 400 mail clients use cc:Mail. From what he's seen of Notes, he likes that too.

Konrad said his upgrade to Notes Mail would cost \$9 per seat, and nothing for mobile users except the cost of the server for the whole setup.

In the eyes of customers, the Lotus approach is to lure, rather than outright force, users to convert. "Lotus has millions of cc:Mail customers, and that's a pretty core part of their business, so I don't think they want to force anybody [to migrate]," said Jonathan Lewis, mail coordi-

nator for the National Park Service. "I think they want to give people options. I see it as a positive."

Lewis, who faces federal government budget constraints, is taking a wait-and-see approach with regard to Notes. "Certainly we're not going to do any overnight migration," he said.

The Web, he adds, remains an alternative for many organizations. "Some companies may decide that just being able to easily put up Web servers and publish documents onto those servers using other people's technology may make it possible for them to avoid Notes."

Lewis can envision some of the Park Service's "more technology-rich locations" migrating to Notes.



Lotus CEO Mike Zisman is banking on a Notes price break.

John Gustafson, a 3M systems specialist in St. Paul, Minn., said his company made the decision to migrate from cc:Mail to Notes even before last week's announcement. "We haven't decided whether we're going to bother with the Mail-only client. We expect Desktop to be high volume."

Others, however, like Walt Hadzinsky of Armor All Product Corp., will not switch to Notes unless there is no choice. He said he has a "very dynamic" cc:Mail post office and applications built around it that would be hard to undo. Then, there's the complexity of Notes, he concluded.

Price, however, should no longer be the inhibiting factor.

"Certainly, with [our] pricing actions, I hope I don't hear again that Notes is expensive," said Mike Zisman, executive vice president and CEO of Lotus. ■

## Notes 4 goodies

The price of Lotus Development Corp.'s Notes servers will escalate when Release 4 hits the streets, but for the extra cash, some Internet-related goodies come bundled with the package.

In mid-1996, Notes 4 servers will feature native support for HyperText Transfer Protocol (HTTP), HTML and Java technology.

Another freebie for Notes customers will be the InterNotes Web Publisher, which converts Notes documents to HTML. (NW, Dec. 11, page 1). InterNotes Web Publisher is currently available for \$2,995.

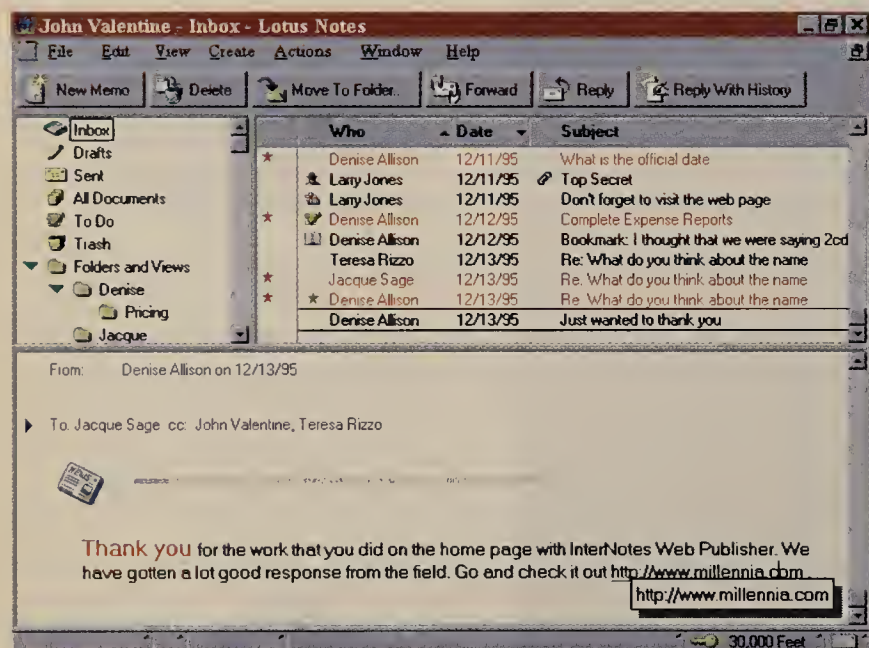
Officials said the fully integrated HTTP Notes server will sell for \$495 for single processor systems and \$2,295 for symmetrical multiprocessing (SMP) systems.

The Notes 3 server, priced at \$275, supports SMP but can accommodate only two processors. The new Notes 4 server can support up to six processors.

Before the HTTP Notes server ships in mid-1996, Lotus will deliver a bundle, code-named "Spike." The bundle will include an HTTP server, the InterNotes Web Publisher and a Notes server.

Customers with maintenance contracts will be able to get free upgrades when the Notes server with native HTTP/HTML support is released.

By Carol Sliwa



Lotus Notes Mail mirrors cc:Mail's three-pane interface.

# Neuron Data lets users build Web links into existing apps

By John Cox  
Mountain View, Calif.

Neuron Data, Inc. will announce this week a tool that makes it possible to add World-Wide Web capabilities to business application's built with Neuron's object-oriented development tool set.

Web Element, part of Neuron's Elements Environment tool set, will let corporate programmers add Web browsing capabilities to existing applications. It will also make it possible to enhance Web pages by adding to them applets that can interact with corporate databases, server logic and client-based desktop applications via Microsoft Corp.'s OLE interface.

In this way, said Alain Rappa-

port, Neuron's president, "The Web is simply an object that is incorporated into your business application." By contrast, he said, other emerging tools require developers to use the Web server as the point of access to existing corporate data and applications.

Web Element is an extension of Elements Environment 2.0, which is an object-oriented, cross-platform development tool set with a graphical user interface builder, a rules engine, data access interfaces and a distributed communications infrastructure.

Developers can use Web Element in two ways. At the simplest level, they incorporate it as a

complete Web browser into their application. End users then no longer have to invoke and use a separate browser outside of their application interface.

This browser includes a graphical navigator, a diagram of how the Web documents are related to each other.

Secondly, developers can use Web Element Pro, which includes the browser and navigator, but adds two other tools for customizing the Web interface. One is Web Control, a browser and API that can be manipulated by C or C++ programs (or, alternatively, Web Control can be controlled directly through ObjectScript).

The second tool is the Naviga-

tion API, which accesses the internals of an HTML document and represent these structures in new ways.

With Neuron's ObjectScript, as with SunSoft, Inc.'s Java, developers can create small applets that are downloadable with an HTML page to a Web client. These applets can then execute

locally, exploiting the various components of the Elements Environment to access SQL databases, external OLE controls, business rules, and C or C++ programs.

Web Element will be available in March on Windows, Windows NT, Windows 95 and Solaris. Pricing will start at about \$45 per user.

©Neuron Data: (415) 528-3450.

## Neuron Data snapshot

<b>Founded:</b>	1985
<b>Primary products:</b>	An object-oriented tool set, called Elements Environment, for building distributed business applications.
<b>What's new:</b>	Web Element, a set of tools for incorporating Web functions into corporate applications, as well as for creating HTML-based applications that can be executed on clients and interact with corporate data and applications.
<b>Ownership:</b>	Privately held



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# Travel made easy via the Web

*SABRE and Worldview join forces for Internet-based travel reservation service.*

By Peggy Watt  
Tulsa, Okla.

Web voyagers soon may find it easier to journey the real world with the scheduled March 1996 debut of Travelocity, a comprehensive travel service that combines the expertise of several on-line pioneers.

The service has the potential to quickly become one of the first strong, widely accessible commercial World-Wide Web applications. The animated multi-media service will enable users to query Worldview Systems Corp.'s extensive travel databases, and then book lodging and transportation in real time through The SABRE Group's popular travel reservation service.

The Travelocity interface is being designed and installed on Silicon Graphics, Inc. WebForce servers here. The servers will link to both Worldview's Oracle Corp. database, which runs on Sun Microsystems, Inc. workstations in San Francisco, and the SABRE reservation system here, which is IBM mainframe-based and owned by American Airlines, Inc. parent company AMR Corp.

Designers promise the SABRE interface will be faster than the EasySABRE system currently available to consumers through on-line services.

Travelocity will be markedly different from the largely static information-dispensing sites that make up the bulk of existing Web sites — and is being designed to handle huge customer demand.

"It's very important that this be powerful and rock solid," said Terry Jones, president of The SABRE Group's SABRE Interactive business unit, which is building the interface to SABRE on Travelocity.

The core SABRE reservation system that Travelocity will tap into 4,600 messages per second from airlines, travel agents and consumers through different channels, Jones said.

## Gluttons for punishment

Mountain View, Calif.-based Silicon Graphics' WebForce servers were designed for such punishment, said Lenny Rosenthal, WebForce server market-

ing manager. "This is exactly the use the WebForce Challenge server was designed for," Rosenthal said.

The L Class systems are two- to 12-CPU symmetric multiprocessing Reduced Instruction Set Computing-based systems, running at 200MHz to 250MHz with 4M bytes of cache RAM and 960M bytes of sustained bandwidth to accommodate hundreds of simultaneous connections.

The user interface is being designed with Silicon Graphics' new Virtual Reality Modeling Language tool set and Netscape Communications Corp.'s Web authoring tools, and runs on Netscape's Web server.

The interface to Worldview's travel information database is being built with Netscape and Sun Java tools, and will employ Verity Corp. text-search software. The database contains information about 157 destinations that are cross-indexed by 134 interest categories and

is still growing.

In addition, Worldview will handle the merchandising portion of Travelocity, and is setting up a Netscape merchant server to sell travel supplies.

"Secure transactions require industrial-strength tools," said Neal Checkoway, Worldview president and chief executive officer.

Netscape's merchant server implements Secure Sockets Layer, and Worldview

and SABRE are working to coordinate logons so users are simultaneously recognized by both of their systems.

"All the elements that are being brought together make for a huge system," Checkoway said. "We're doing a lot of custom engineering work to be sure the SABRE servers can talk with ours."

Although Worldview's travel database will continue to be available on such subscription on-line services as Prodigy and America Online, Checkoway said he anticipates that the Web will offer the real growth opportunity. ■



SABRE's Jones says Travelocity will tap into a reservation system handling 4,600 messages per second.



Worldview President and CEO Neal Checkoway says security and reliability are key considerations.

## ARDIS beckons users with flat-rate pricing

By Joanie Wexler  
Lincolnshire, Ill.

ARDIS Co. last week revamped the way it charges for its wireless messaging services by launching a flat-rate pricing structure that should save users about 20% on their monthly bills.

The pricing plan replaces a much more complicated, year-old scheme under which users had to translate "message units" into volume and calculate extra-usage charges that declined as volume grew. Charges also varied depending on what mail application the customer used.

The pricing overhaul is the latest example of a recently reorganized ARDIS turning its attention away from an engineering focus in favor of marketing incentives aimed at spurring usage of wireless data services (NW, Nov. 20, page 70).

With the new pricing, users pay a flat rate for a predefined amount of messages, measured in kilobytes. The base prices range from \$19.95 to \$189.95 per month.

If customers send more than the amount of data their base fee covers, they pay 54 cents for each additional kilobyte. Customers can choose among flat pricing plans for sending up to 20K, 150K, 350K and 750K bytes of messages per month.

ARDIS' new pricing tiers are the same regardless of messaging application used. Applications available include ARDIS' own PersonalMessaging offering, Motorola, Inc.'s AirMobile Wireless for Lotus cc:Mail, River Run Software Group's Mail-on-the-Run, CE Software, Inc.'s MobileVision and RadioMail Corp.'s RadioMail.

## Fore to grab LAN switch maker Alantec

By Jodi Cohen and Tim Greene  
Pittsburgh

Fore Systems, Inc. last week moved to address the needs of those customers planning to take ATM across the enterprise by agreeing to acquire LAN switch vendor Alantec Corp. in a stock swap worth about \$700 million.

The proposed deal — Fore's fourth such move this year — would provide the company with the technology it needs to move beyond its LAN and campus strongholds by integrating routing technology from Alantec into its Asynchronous Transfer Mode switches. The purchase would complement the company's acquisition two weeks ago of CellAccess Technology, Inc., a maker of wide-area ATM gear (NW, Dec. 11, page 10).

The new deal should also smooth the migration to ATM for Alantec's Ethernet and FDDI switch customers.

Alantec brings to the table its PowerHub family of multiprotocol switches for workgroup, department and LAN backbone environments. Throughout its product line, Alantec incorporates bridging/routing software that includes IP and IPX routing,

virtual LAN configuration, firewalling and port-monitoring capabilities.

Alantec already is a partner in Fore's ForeThought program, under which vendors can integrate Fore's ATM access software into their products. Alantec offers ATM interface modules for its PowerHub 3000 and 5000, and has plans to extend ATM throughout its product line.

The meshed product lines will allow users to deploy ATM switches from Fore across a campus backbone providing connectivity among Alantec departmental and workgroup switching hubs.

Analysts said the acquisition will add to Fore's size and strength, increasingly important factors in a market where the power has become concentrated among a small group of large and growing companies such as 3Com Corp., Bay Networks, Inc. and Cisco Systems, Inc.

Fore posted revenue of \$97 million for the first nine months of 1995, while Alantec reported revenue of \$36.5 million for the same period. The merger will bring Fore's total employee count to 850.

Alantec customer Tom Arons, senior program analyst at the University of California at Davis, said the merger is good news for both companies. "Alantec needs an ATM solution, and Fore needs some [routing] smarts in its switches because its switches

*See Fore, page 14*

Comparative prices show ARDIS is more economical at the very low and very high ends than its chief rival, RAM Mobile Data, which is more cost-effective for medium-volume users (see graphic).

RAM also uses flat rate pricing, but still employs a declining extra-charge scheme. RAM's flat rate pricing plans are based on 100K, 200K, 275K and 500K bytes of use monthly.

One chink in the new ARDIS plan is that it clashes with an ARDIS promotion launched in June for an application called AirMobile for cc:Mail, which lets users connect wirelessly to their corporate LAN servers. That promotion allowed users to send a whopping 5M bytes of data per month for \$75 and was set to expire at the end of this year.

But the software was delayed and only be-

came available in recent weeks, so ARDIS will extend the sign-up period through March 1996. The prices will be in effect for a year after customers sign up, said Dan Croft, senior vice president of marketing at ARDIS.

©ARDIS: (708) 913-1215.

### What's a message worth?

ARDIS' new wireless messaging price structure gives the company an edge over chief rival RAM Mobile Data, primarily at the high end.

Message usage (in K bytes*)	Price per month	
	ARDIS	RAM
20	\$19.95	\$25.00
100	\$63.15**	\$25.00
150	\$49.95	\$42.50
200	\$76.95	\$66.00
350	\$99.95	\$108.25
750	\$189.95	\$202.50

\*100K bytes equals about 70 pages of messages.

\*\*For sending 100K bytes of messages, ARDIS users would save by choosing

ARDIS' next highest pricing tier, which allows them to send 150K bytes a \$49.95. ARDIS charges 54 cents per extra kilobyte between each plan tier, while RAM's extra kilobyte charges range downward from 35 cents to 27 cents as message volumes increase.





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## Ethernet

Continued from page 1

"We are not ATM advocates, and we really believe that Ethernet can scale to meet every requirement of the enterprise, including multimedia, desktop conferencing and even high-performance connections to the Internet," he said.

NetWorth had been developing Gigabit Ethernet prior to being acquired by Compaq, and now Compaq has decided to move forward with it.

McHale said that 1G bit/sec Ethernet, sometimes called ultra fast Ethernet, would benefit from existing efforts to facilitate Ethernet support of multimedia applications.

The IEEE 802.1p committee is working on a prioritization scheme that will allow multicast video or real-time desktop videoconferencing to run across Ethernet, which could eventually include 1G bit/sec Ethernet if it is standardized.

"The underlying assumption has been that you can't run multimedia on Ethernet because it is nondeterministic. The fact of the matter is you can," he said. But to effectively support isochronous traffic, you need more bandwidth than 100M bit/sec

fast Ethernet has to offer, he added.

### Universal Ethernet

McHale said that besides backing the standards push, Compaq is readying a strategy, code-named Universal Ethernet, that calls for a network architecture using 100M bit/sec fast Ethernet to the desktop — whether it be switched or shared — and 1G bit/sec Ethernet in the backbone.

Ahmad Nouri, who presented the Gigabit Ethernet proposal to the IEEE committee for Compaq last month, said the goal is to extend Ethernet so it can serve as a backbone technology capable of supporting multiple 100M bit/sec Ethernet networks and devices.



Pushard says Compaq will probably offer ATM and Gigabit Ethernet technologies if they merge as standards.

Doug Pushard, vice president of Compaq's internetworking products group, said Compaq will likely offer Asynchronous Transfer Mode as well as Gigabit Ethernet technologies, if both emerge as major market standards. "I think there will be a need and a market for both," he said.

Although Compaq is evaluating ATM technology, Nouri said Gigabit Ethernet could preclude the need for ATM in the local area.

## NYNEX takes an aggressive tack with ISDN upgrades

By Tim Greene  
New York

NYNEX Corp. last week revealed plans to shell out hundreds of millions of dollars on network upgrades over the next five years to ensure that almost all of its customers will be able to get ISDN directly from the nearest central office switch.

The goal of the project, which starts next spring, is to make the service available directly from 90% to 95% of NYNEX central offices — up from the current 60%.

The move should help meet growing demand for ISDN, which is becoming popular for supporting Internet and remote access applications.

Not only will the investment make ISDN more readily available from NYNEX, but it should also make it cheaper. That's because NYNEX will avoid having to backhaul the service from just distant to local switches.

The backhauled service costs \$10 extra per month plus an extra \$75 installation fee.

Those charges will disappear for most users as ISDN technology is implemented on switches in their vicinity, according to Patricia Conway, NYNEX staff director of ISDN product management. However, there are no immediate plans for rate changes, she said.

The upgrade is a departure for NYNEX, which a Dataquest, Inc. report says lags behind other regional Bell operating companies in ISDN availability.

By the end of January, NYNEX plans to sign deals worth more than a total of \$250 million with Northern Telecom, Inc. and AT&T Network Systems for hardware and software to make its switches compliant with the National ISDN-I standard.

If possible, NYNEX will just upgrade the software in current switches. ■

If the IEEE agrees to pursue 1G bit/sec Ethernet as a standard, Nouri said Compaq will likely roll out a suite of Gigabit Ethernet products, including switches to connect multiple 100M bit/sec Ethernet switches or repeaters.

These switches could also provide connectivity to an ATM wide-area network.

For the IEEE committee to even consider Gigabit Ethernet, the proposal has to support backward-compatibility with IEEE 802.3 devices and support for the Ethernet access scheme, carrier-sense multiple access with collision detection.

The proposed standard will call for use of fiber-optic and, believe it or not, unshielded twisted-pair wiring.

The committee will also eval-

uate Fibre Channel technology as a possible media for the physical layer.

Nouri said he expects that the technology will initially cost three times that of 100M bit/sec fast Ethernet, while offering a tenfold increase in available bandwidth.

### Worth the expense?

But Ed Frost, MIS director at Kentucky Housing Corp., said the pricing may be too high and that the economic feasibility of Gigabit Ethernet would be critical to its success.

If it costs twice as much as 100Base-T or the same as FDDI, then it would be attractive and users would jump on it, Frost said. "One of the problems with ATM right now is it's pretty costly, but if [Gigabit Ethernet] is

priced too high, it won't catch on."

Analysts also pointed out that, similar to regular Ethernet — which only provides 3M or 4M bit/sec of throughput — Gigabit Ethernet would offer considerably less than 1G bit/sec actual throughput.

One user said that while Ethernet may be able to scale nicely in the LAN, it still has its limitations.

"The problem with the [Universal Ethernet] plan is that you will still have to convert the LAN at some point into an ATM WAN," he said. "ATM is attractive because you can have a common ATM network for the LAN and WAN."

Staff Writer Ben Heskett contributed to this story.

## Web pricing

Continued from page 1

at Microsoft.

For instance, today a 1,000-user license SQL Server is about \$96,000, and each user beyond that thousand could cost an extra \$96 or thereabouts.

Voth would not detail how Microsoft would modify its pricing, but he did say the company would make SQL Server much more affordable as the underpinning to a Web site.

Microsoft announced two weeks ago an overarching Web strategy that included bundling its Web server with NT Server free of charge, as well as distributing its Web browser free — moves analysts said show a commitment to the Internet and a serious attempt to catch up to competitors that have beat the company to the punch.

Microsoft is also putting together a package of applications that is designed to get users up and running on the Web quickly, Voth said. That package is likely to be one of a number of newly configured bundles from the BackOffice family of products, observers said.

The most likely configuration would include NT Server, Information Internet Server and SQL Server, plus a set of Web site building and administration tools that would give users a drop-in Web site that is easy to build and configure. Microsoft is encouraging users to take advantage of the integration of these tools.

The Internet Database Connector API, for instance, gives

users access from the Internet Server to SQL Server or any database that complies with Microsoft's Open Database Connectivity (ODBC) protocol.

### Oracle happenings

Meanwhile, market-leading Oracle Corp. recently strung together a series of new products with a pricing plan designed to keep it at the center of database Web development. The company will offer its Web Server — which includes an unlimited Oracle7 Workgroup server license for use over the Internet, an HTML development tool kit, and database and Web administration utilities — for \$4,995. Oracle Workgroup Server alone usually carries a price tag of \$199 per server and \$99 per client.

Another offering, Oracle WebServer Option, is designed to integrate with existing applications built around the enterprise version of the company's database. WebServer Option is also priced at \$4,995.

Analysts see a future in moves like Oracle's. "Software companies have to change their pricing structure completely for use on the Internet," said Paula Boyle, an analyst at Giga Information Group in Norwell, Mass.

At the same time, Web software is so cheap and ubiquitous that users "now expect to publish a certain amount of information via the Internet" for free, Boyle said.

Microsoft database rival Sybase, Inc. last month tied up some loose ends in its Web structure with a five-tiered pricing

## THE PRICE OF BUILDING A WEB ON YOUR DATABASE

Company	Pricing plan
Microsoft	New pricing and packaging to be announced early next year.
Oracle	A \$4,995 Web Server bundle gives users unlimited Internet access to Oracle7 Workgroup Edition.
Sybase	Special pricing of \$2,000 to \$30,000 for unlimited Web access to SQL Server databases.

plan for unlimited Internet access to its SQL Server database. The categories start with PC-based systems, which may be priced at \$2,000, to the largest Unix servers, which can cost \$30,000.

That pricing scheme represents a substantial discount off the company's traditional unlimited user pricing of \$30,000 to about \$120,000 per server.

A spokesman for Sybase said the database maker is trying to encourage users to put data out on the Internet and is assuming that users already have its version of SQL Server in-house.

Informix Software, Inc. is formulating a strategy for pricing its database software for use on the Web, company officials said, but they declined to comment on specifics.

Giga's Boyle said that not all Web software is subject to commodity pricing, however. While databases and browsers get less expensive, security and management tools for the Web will remain pricey, analysts agreed.

Senior Editor Peggy Watt contributed to this story.



Voth says Microsoft is developing a package of applications to get users up and running on the Internet more quickly.











## NT

*Continued from page 1*

least part of it is coming right around the corner.

Within the next four months, Microsoft Corp. plans to begin beta tests on an update to its Windows NT Server that will let Microsoft clients create NT server-to-server connections across the Internet, according to Mike Nash, group product manager for Windows NT Server.

The technology is designed to make the Internet itself a de facto WAN for NT networks by letting applications open files on remote machines, without necessarily even knowing they are reaching across the Internet to do so, Nash said.

The connection is designed to give users data-sharing capability and remote access all in one product.

#### How do they do it?

The NT Shell Update, due

later this year, will include a gateway between the Internet's Domain Name Service (DNS) and NT's Windows Internet-naming System (WINS), a database that maps IP addresses to user names.

The gateway will rely on an NT-based version of DNS that Microsoft is developing. DNS currently runs only on Unix. The NT-based DNS will link with WINS to track dynamically assigned IP addresses within NT nets.

Microsoft also is developing a graphical administration tool for DNS, which is currently managed using ASCII editors.

Internet-based NT connections also will depend on new versions of NT Workstation and Windows 95 that can support DNS names as well as NETBIOS names. Both clients are due in 1996.

With that gateway, users will be able to share files and printers as easily across the Internet as

they do on their own networks, Nash said.

Users log on once, and NT Servers can pass encrypted authentication tokens across the 'Net to log users on to remote networks.

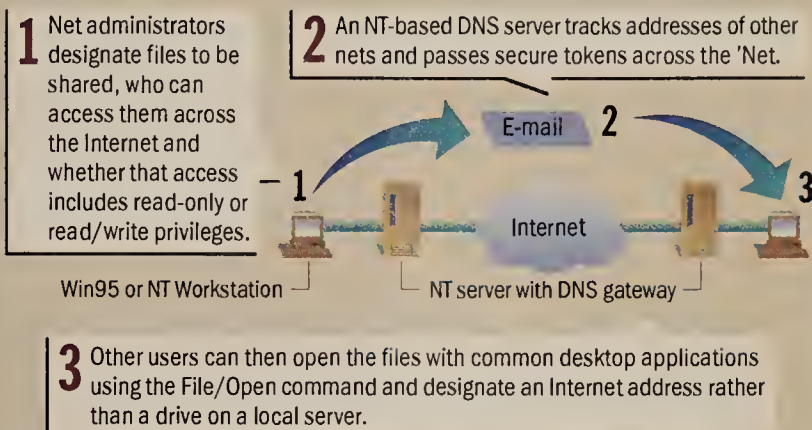
"Once you map the NET-BIOS to IP, then everything else is exactly the same as what people are used to in the NT networks — except you're doing it over the Internet," said Dan Perry, a Windows NT program manager.

The gateway could act as cheap groupware, enabling users on multiple networks to share files and collaborate as if they were on the same network, Nash said.

It also could give mobile workers access to their networks over the Internet, rather than through the Remote Access Services dial-up access feature in NT.

A closer connection for NT Servers to the Internet does raise

#### WIDE-AREA NETWORKING OVER THE 'NET



the potential for users to have their networks hacked, Nash conceded.

However, the C2-rated security in NT Server applies to all connections coming in to the net and provides file-level security to every workstation, he said.

Most organizations still will want to install a proxy server outside their firewall, however, and route incoming traffic through

it to limit the hacking potential.

The gateway is scheduled to be part of the Shell Update Release of Windows NT, which will put the Windows 95 graphical user interface on both NT Workstation and NT Server.

The Shell release is due to enter beta testing during the first quarter of 1996 and will probably be released around midyear. ■

## ATM

*Continued from page 1*

ABR, estimates he will have to replace his Cisco Systems, Inc. LightStream 100 switches with Cisco's new LightStream 1010.

Many of the ATM switches installed today do not or cannot support some or all modes of ABR service due to processing or architectural limitations. ABR uses available, rather than reserved, bandwidth for data transmission.

Moreover, ATM Forum-defined specs for ATM quality of service — of which ABR is one — were not complete enough to implement in silicon at the time many ATM switches were installed.

ABR uses bandwidth that is left over after some has been reserved for constant bit rate (CBR) and variable bit rate (VBR) traffic.

As a result, the share of ABR bandwidth may increase or decrease, depending on the needs of CBR and VBR applications.

ABR will be popular among users who may want the network to guarantee a certain cell loss rate but can afford to wait a little while for data to get to its destination. File transfers and electronic mail are examples of applications.

There are at least two modes of ABR service: Explicit Forward Congestion Identification (EFCI), which allows switches to set a bit in the headers of forward cells to indicate congestion; and Explicit Rate (ER), which allows switches to indicate within forward or backward cells exactly which rate they are willing to receive along a particular connection.



**"It would be very difficult for a user today to either justify the cost of an ABR upgrade or validate the strategy of an ABR-providing vendor in the absence of any application context to put this service into."**

*CIMI's Thomas Nolle*

ABR is now at the point where vendors can deliver those features in hardware. That means some users of Fore Systems, Inc. switches will have to replace interface cards at a minimum cost of 20% of their switch investment in order to use it, according to Joe Skorupa, director of ATM switch marketing for the company.

"There will be a program for our customers to trade in their port cards," Skorupa said. "The program will let the customer preserve about 70% to 80% of their investment."

Fore is the market leader in ATM product shipments with a 65% share, according to Robertson, Stephens & Co., a San Francisco-based investment firm.

Cisco, meanwhile, offers users of its LightStream A100 switch a 50% rebate to replace the A100 with the LightStream

1010, which has ABR. The architecture of the A100 could not accommodate the service.

The A100 "is not a switch that has a future," said Anthony Alles, ATM product-line manager for Cisco.

Users of Bay Networks, Inc.'s LattisCell and 5000AH ATM switches also will have to replace those products with new switches if they want ER ABR, said Rob Newman, vice president of switched internet products at Bay. The LattisCell and 5000AH already support EFCI ABR, he said.

"You need these functions down in silicon, so it's not possible to simply upgrade an old switch to do the advanced ABR function," Newman said. He did not discuss an upgrade plan for LattisCell and 5000AH customers because Bay has not "announced" ER ABR on its switches yet.

Some Bay users already have prepared for this situation.

"We bought technology that was really about a year out so we'd have some investment protection," said Jay Wilson, senior advisory systems engineer at AG Communication Systems in Phoenix. "We realized ATM was young, and we were willing to go with a vendor that had what ATM had to offer today — but we really wanted their second generation. We've gone with their first generation, but we've actually worked into the deal an uplift, at no cost to the second generation."

Some users will not need that forklift upgrade because their

vendor disagrees with Bay's assertion that ABR needs to be implemented in silicon. Newbridge Networks, Inc. is already shipping EFCI ABR software in its VIVID workgroup switches, according to Stuart Aaron, director of product marketing at Newbridge.

Those customers who purchased the switch prior to March 1995 can add ABR support by downloading free software upgrades, he said. They also will be able to upgrade to ER ABR via a software download when it's available, Aaron said.

"There's been a lot of hype around theoretical concepts and what's going to give you the theoretical 100% throughput performance numbers," Aaron said. "We feel that with [EFCI] ABR, plus additional features like early packet discard, intelligent queuing and good buffer management, we can deliver the performance of ER without the cost/complexity points" of hardware implementations.

Some analysts, however, feel that software-based ATM services short change users.

"If you consider the speed and latency issues, it makes more sense to support most new features in hardware," said Melinda Le Baron, research director for Gartner Group,

Inc.'s Network Computing Infrastructure group. "You can't afford the software implementation, it would be too slow."

#### CALCULATING COSTS

**Allen Robel, senior network planner at Indiana University in Bloomington, will have to scrap all his Cisco ATM equipment in order to upgrade to new devices that support ABR service — which he figures will cost him a total of about \$80,000.**

But users of Newbridge's 36150 and 36170 enterprise and WAN ATM switches will have to replace their switch control cards if they want to implement ABR, said Irfan Ali, vice president of product marketing at Newbridge. A separate buffer upgrade may also be necessary, he said.

3Com Corp., in the meantime, is shipping an ER-like ABR mechanism on the LinkSwitch 2700

Ethernet-to-ATM edge device, said Michael Rubin, ATM product-line manager at 3Com. The firm's ATM adapters do not support ABR and will have to be replaced at \$1,000 per card, he said.

Nonetheless, some analysts recommend that users hold off on making any upgrades.

"If I were that buyer, I would sit on that investment through 1996 at the very least, making no upgrades for things like ABR until I had a better understanding of how my applications were going to evolve to ATM and under what specific conditions I would expect to consume ABR," said Thomas Nolle, president of the CIMI Corp. consultancy in Voorhees, N.J. ■



## Cisco

Continued from page 1

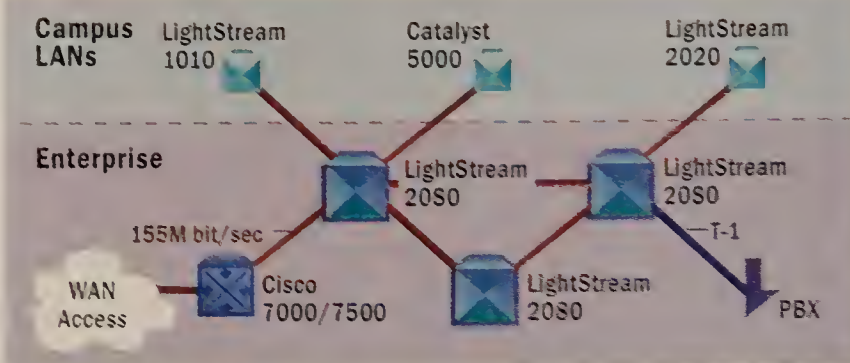
2080, is expected to be based on the same midplane architecture as the company's current high-end LightStream 2020. But the 2080 will have at least 10G bit/sec of switching capacity, 16 slots for processing and media interface cards, and support for ATM Forum-defined services such as available bit rate (ABR) and Private Network-to-Network Interface (P-NNI) routing, sources said.

The 2080 will be positioned as a concentrator of 155M bit/sec ATM links from building and campus backbone nets to form an enterprisewide switched internet. The device will also serve as a central office-based switch that can link these enterprise nets to a variety of carrier WAN services.

"It's just going to be a bigger version [of the 2020] — more ports, more capacity," said Rick Malone, principal at Vertical Systems Group in Dedham, Mass.

## CISCO'S ENTERPRISE ATM SWITCH PITCH

With 10G bit/sec of bandwidth and 16 network interface slots, Cisco's planned LightStream 2080 ATM switch would be able to anchor enterprise ATM nets. It could be used to interconnect LightStream 1010 and 2020 ATM switches, as well as Catalyst 5000 LAN switches — deployed in campus nets — plus provide access to carrier WAN services.



By contrast, the LightStream 2020 sports 12 slots — at least three of which are used for switching and processing modules — and a switching capacity of 2G bit/sec. LightStream 2020 users will be able to use their processing and interface modules in the 2080, thereby protecting their switch investment, sources said.

Joseph Uniejewski, director

of marketing for Cisco's ATM business unit, confirmed that the LightStream 2080 will emerge next year. The device will support ATM Forum User-to-Network Interface (UNI) 3.0 and 3.1 signaling capabilities, P-NNI and at least two modes of ABR service, he said.

UNI signaling links an end user's device to an ATM switch. P-NNI exchanges topology and quality-of-service routing information between switches, while ABR takes care of congestion control.

Uniejewski declined to disclose further details on the switch. But analysts said it has to support at least 10G bit/sec of switching capacity if it is to address future requirements for enterprise connectivity and WAN access.

Indeed, some analysts who are familiar with the 2080's development believe the switching capacity may scale up so it can handle multiple 622M bit/sec ATM links. Uniejewski would only confirm that 622M bit/sec ATM support is planned for the LightStream line in 1996.

Though the LightStream 2080 will be able to support the 2020's processing and interface cards, observers expect Cisco to unveil new modules for the 2080, as well. They will incorporate hardware for processing ATM Forum quality of service features, such as ABR, and for 622M bit/sec links. It is unclear whether these new modules will also have more ports than the 2020's cards, but analysts expect that they will.

Currently, the 2020 supports eight-port switched Ethernet, two-port switched FDDI, four- and eight-port T-3 and E-3, two-port 155M bit/sec ATM, eight-port T-1 E-1 circuit emulation and eight-port serial interface modules.

Pricing for the 2080 could not be learned by press time. Malone expects the switch to ship in the second half of 1996. ■

## IBM to enhance its 6611 router

In February, IBM will make good on a string of promises it hopes will keep its beleaguered 6611 router alive and kicking — at least in SNA shops.

The company on Feb. 2 will offer a new release of 6611 software called Multiprotocol Network Program (MNP) Version 1 Release 4. The new software will add key new Systems Network Architecture connectivity enhancements — everything from support for Advanced Peer-to-Peer Networking's High Performance Routing (HPR) and dependent LU Requester (dLUR) to new frame relay support, all to help SNA users more easily migrate to APPN and mixed-protocol environments.

Analysts label the 6611 the Rodney Dangerfield of routers because it has received little industry respect and internetworking market share. It also has played catch-up to other router vendors and now finds itself behind Cisco Systems, Inc., which has, for example, already added dLUR support to its routers.

And now, with IBM focusing more of its development efforts on switching products, many see any future 6611 enhancements to be incremental and targeted at keeping existing customers happy, rather than any breakthrough technologies.

"These are the features IBM needed to add a long time ago to the 6611," noted Anura Guruge, an independent analyst based in New Ipswich, N.H. "It is one of the great ironies that Cisco should be out in front of the industry with APPN."

In that vein, however, the enhancements in MNP 1.4 deliver on an important list of promised enhancements for the SNA world. For example, HPR will enable 6611s in APPN nets to dynamically route around failures and provide a possible tenfold increase in APPN net performance. In addition, dLUR will let 6611s pass traditional SNA 3270 data over an APPN net.

MNP 4.1 also adds support for IBM's Boundary Access Node, which will let users tie 6611-based internets over frame relay services to IBM's 3745 front-end processor.

Existing users can upgrade to the new software at no charge. Pricing for new licenses has not been set.

As expected, IBM also rolled out four new 2210 Nways Multiprotocol Routers that give IBM less expensive, more powerful remote branch office devices (NW Nov. 13, page 106).

By Michael Conway

## Cisco adds FRADs routers

Cisco Systems, Inc. last week unveiled several extensions to its 2500 router line for users of legacy equipment and frame relay networks.

Cisco unwrapped the 2520 through 2523 series of devices, which can be configured either as frame relay access devices (FRAD) or multiprotocol routers. They feature increased serial port density and transmission of bisynchronous and polled asynchronous data over low-speed lines.

## THE CISCO 2500 SERIES



**Product description:** Four models — 2520, 2521, 2522 and 2523 — can be configured as multiprotocol routers, serial-only FRADs or FRADs with an Ethernet or token-ring LAN attachment.

**Price:** \$1,595-\$4,695

**Availability:** February

two synchronous T-1 links for frame relay access, connection of synchronous controllers, backup, load balancing and bandwidth-on-demand applications.

In another configuration, which Cisco refers to as LAN FRAD, the devices sport an Ethernet or token-ring interface, along with the nine serial and two T-1 links, plus route IP and IPX traffic.

Meanwhile, Cisco's also rolled out new routing hubs that feature two synchronous T-1 WAN links and one ISDN BRI. The 2518 sports 23 twisted-pair Ethernet ports, while the 2519 features 23 twisted-pair token-ring ports.

The 2520 through 2523 routers cost \$1,995 to \$8,995. The 2520 through 2523 FRADs cost \$1,595 to \$8,995, while the LAN FRADs are priced from \$2,195 to \$4,695. They will ship in February.

The 2518 and 2519 routing hubs cost \$4,595 and \$5,995, respectively. They will be available in January.

For more information, contact Cisco at (408) 526-4000.

By Jim Dwyer

## Fore

Continued from page 10

are pretty dumb," he said.

Skip MacAskill, a senior analyst with Gartner Group, Inc., said the merger will make Fore the first vendor to deliver distributed routing technology for extending ATM nets across the enterprise. Cisco and Cabletron Systems, Inc. also have made moves to integrate routing technology into their switches, but he said Alantec's technology is more mature.

One good thing about the deal is that Fore and Alantec

have little overlap among their product lines, said Trudy Barker, an analyst with Dataquest, Inc. in San Jose, Calif. "It's a very clean type of partnership," she said.

But the companies will need to ensure that Alantec's gear can be controlled easily via Fore's management tools, she said.

At least one Alantec customer does not feel locked into Fore's ATM migration strategy. Steve Mandrup, a net architect for Brooktree Corp. in San Diego, is looking to convert some of his net to ATM possibly within a year. "I'm not sure if [Fore's is] the path we'll go with," he said. ■

## Four for Fore

The ATM LAN market leader has gone the acquisition route four times this year to broaden its product portfolio.

## May 1995

- Announced plans to buy Ethernet workgroup switch vendor Applied Network Technologies.
- Said it would acquire routing and ATM software provider RainbowBridge Communications.

## December 1995

- Announced agreement to purchase ATM multiprotocol software technology.
- Disclosed plan to acquire enterprise LAN switching bus maker Alantec.



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# FCC OKs Sprint global venture

By David Rohde

Washington, D.C.

The Federal Communications Commission last Friday approved Sprint Corp.'s global venture with France Telecom (FT) and Germany's Deutsche Telekom (DT), capping an 18-month battle over the politically charged transaction.

The move means that early next year, the Sprint-led venture, dubbed Phoenix, can begin offering global services with unified billing.

Phoenix will compete with the Concert venture from MCI Communications Corp. and British Telecommunications plc, as well as a variety of global initiatives

spearheaded by AT&T. These were among the competitors leading the opposition to the Sprint venture and causing the delay in its approval.

The FCC approval came despite a determination by its International Bureau that both FT and DT had failed the commission's so-called "effective competitive opportunities" (ECO) — or "echo" — test. The FCC established the test just last month to evaluate invest-

ments by foreign parties in U.S. carriers (NW, Dec. 4, page 12).

Under the terms of Sprint's transaction with FT and DT, the overseas carriers will invest of total of about \$4 billion in exchange for 20% of Sprint stock between the two of them. Sprint is expected to use a good chunk of that money to help fund the multibillion-dollar effort to build a nationwide wireless network using the broadband personal communications services (PCS) licenses it won at an earlier FCC auction.

Commissioner Susan Ness cited the funding of the PCS buildout, which has largely failed to materialize in the past year, as a key reason to approve the transaction.

Labeling both FT and DT monopoly carriers, the five FCC commissioners used an escape clause in the echo test that enables them to overrule the results in favor of "public interest" factors, such as the potential boost to the U.S. economy.

The FCC put several conditions on its approval. Most notably, Sprint will not be allowed to increase traffic between France and Germany until the countries open up their markets to competition.

As a result, Sprint's U.S. customers conceivably may be forced to rely on Sprint competitors or resellers to carry some of their traffic to France and Germany at some point over the next two years. ■

## Cybersmut

Continued from page 6

sympathetic user groups had wanted Congress to require that RBOCs face permanent competition by local facilities-based carriers with meaningful market share before entering the long-distance business.

The RBOCs wanted to keep the looser standard originally passed by the House last August.

The tentative agreement requires that there be at least one facilities-based competitor for an RBOC wishing to enter the long-distance business, but drops the significant market-share standard.

The sweeping ban on indecent material proposed by Congress would violate free speech and force the Internet, on-line services and even corporations to practice an unprecedented censorship, opponents said.

"Out of fear, many corporations will shut down their external E-mail," said Robert Moskowitz, technical support specialist in Chrysler Corp.'s management information systems.

"This could influence private networks between trading partners. The result would be chaos." ■

## INDECENT PROTEST

Several organizations banded together to stage protests last week in San Francisco, New York, Seattle and Austin, Texas, against the proposed legislation.

## SO MANY SERVERS

NFS/Share™ allows Macintosh users to take advantage of distributed file sharing in a multivendor environment. Based on Sun Microsystems' Open Network Computing/Network File System (ONC/NFS), NFS/Share provides seamless access to NFS-supported services such as UNIX files, IBM mainframe systems, VMS hosts, and PC servers.

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**Internet address** \_\_\_\_\_

## 1 Industry: (check one only)

- |   |  |
|---|--|
| 01. <input type="checkbox"/> Manufacturers (other)  | 12. <input type="checkbox"/> Government (Federal/State/Local)                                  |
| 02. <input type="checkbox"/> Finance/Banking  | 13. <input type="checkbox"/> Military  |
| 03. <input type="checkbox"/> Insurance/Real Estate/Legal  | 14. <input type="checkbox"/> Aerospace   |
| 04. <input type="checkbox"/> Health Care Services   | 15. <input type="checkbox"/> Consultants (Independent)   |
| 05. <input type="checkbox"/> Hospitality/Entertainment/Recreation   | 16. <input type="checkbox"/> Carriers/Interconnects  |
| 06. <input type="checkbox"/> Media/TV/Cable/Radio/Print   | 17. <input type="checkbox"/> Manufacturers (Computer/Communications)                           |
| 07. <input type="checkbox"/> Retail/Wholesale Trade/Business Services   | 18. <input type="checkbox"/> Resellers of Computer/Network Products (VARs, VADs, Distributors) |
| 08. <input type="checkbox"/> Transportation   | 19. <input type="checkbox"/> Systems/Network Integrators                                       |
| 09. <input type="checkbox"/> Utilities  | 20. <input type="checkbox"/> Distributors (Computer/Communications)                            |
| 10. <input type="checkbox"/> Education  | 21. <input type="checkbox"/> Other (please specify) _____                                      |
| 11. <input type="checkbox"/> Process Industries (Mining/Construction/Petroleum Refining/Agriculture/Forestry) |  |

## 2 What is your job function? (check one only)

### NETWORK IS MANAGEMENT:

- |  |  |
|--|--|
| 01. <input type="checkbox"/> Networking Management           | 6. <input type="checkbox"/> Corporate Management (CIO, CEO, Pres., VP, Dir., Mgr., Financial Management) |
| 02. <input type="checkbox"/> LAN Management                  | 7. <input type="checkbox"/> Consultant (Independent)   |
| 03. <input type="checkbox"/> Datacom/Telecom Management      | 8. <input type="checkbox"/> Other (please specify) _____   |
| 04. <input type="checkbox"/> IS, IT, MIS, Systems Management |  |
| 05. <input type="checkbox"/> Engineering Management          |  |

## 3 What is the total number of sites for which you have purchase influence? (check one only)

- |                                      |                                     |                                   |                                  |
|--------------------------------------|-------------------------------------|-----------------------------------|----------------------------------|
| 01. <input type="checkbox"/> 100+    | 3. <input type="checkbox"/> 20 - 49 | 5. <input type="checkbox"/> 2 - 9 | 7. <input type="checkbox"/> None |
| 02. <input type="checkbox"/> 50 - 99 | 4. <input type="checkbox"/> 10 - 19 | 6. <input type="checkbox"/> 1     |                                  |

## 4 What is your scope and involvement in purchasing decisions for network products & services for your enterprise?

- |   |  |
|---|--|
| <b>A. SCOPE</b> (check one only)                  | <b>B. INVOLVEMENT</b> (check all that apply)   |
| 01. <input type="checkbox"/> Corporate/Enterprise | 1. <input type="checkbox"/> Recommend/Specify  |
| 02. <input type="checkbox"/> Department           | 2. <input type="checkbox"/> Approve            |
| 03. <input type="checkbox"/> None                 | 3. <input type="checkbox"/> Evaluate           |
|   | 4. <input type="checkbox"/> Determine the need |
|   | 5. <input type="checkbox"/> None               |

## 5 Check ALL that apply in Columns A and B:

### A. I am involved in the purchase of the following products/services:

### B. I plan to purchase the following products/services:

- |   |   |
|---|---|
| <b>100 B LOCAL-AREA NETWORKS</b>                                      | <b>A 105 B SOFTWARE/APPLICATIONS</b>                                  |
| 01. <input type="checkbox"/> Local-Area Networks                      | 46. <input type="checkbox"/> Network Management                       |
| 02. <input type="checkbox"/> Network Op. Sys. Software                | 47. <input type="checkbox"/> Systems Management                       |
| 03. <input type="checkbox"/> LAN Storage/Backup                       | 48. <input type="checkbox"/> Security                                 |
| 04. <input type="checkbox"/> Optical LAN Storage/Backup               | 49. <input type="checkbox"/> Communications Software                  |
| 05. <input type="checkbox"/> Disk LAN Storage/Backup                  | 50. <input type="checkbox"/> Terminal Emulation                       |
| 06. <input type="checkbox"/> Tape LAN Storage/Backup                  | 51. <input type="checkbox"/> Word Processing                          |
| 07. <input type="checkbox"/> RAID LAN Storage/Backup                  | 52. <input type="checkbox"/> Operating Systems                        |
| 08. <input type="checkbox"/> Network Test/Diagnostic Tools            | 53. <input type="checkbox"/> Client/Server Applications Development   |
| 09. <input type="checkbox"/> Cables, Connectors, Baluns               | 54. <input type="checkbox"/> Database Management/RDBMS                |
| 10. <input type="checkbox"/> UPS                                      | 55. <input type="checkbox"/> Spreadsheet                              |
| 11. <input type="checkbox"/> Network Interface Cards                  | 56. <input type="checkbox"/> Groupware                                |
| 12. <input type="checkbox"/> Peer-to-Peer LANs                        | 57. <input type="checkbox"/> EDI                                      |
| 13. <input type="checkbox"/> SNMP Network Management                  | 58. <input type="checkbox"/> E-mail                                   |
| 14. <input type="checkbox"/> ATM Switches                             | 59. <input type="checkbox"/> Windows/Graphical User Interface         |
| 15. <input type="checkbox"/> Token-Ring Switches                      | 60. <input type="checkbox"/> Multimedia                               |
| 16. <input type="checkbox"/> Ethernet Switches                        | 61. <input type="checkbox"/> Graphics/DTP                             |
| 17. <input type="checkbox"/> Remote LAN Access/Communications Servers | 62. <input type="checkbox"/> Remote Access                            |
| 18. <input type="checkbox"/> Superservers                             | 63. <input type="checkbox"/> Imaging                                  |
| 19. <input type="checkbox"/> File/Application Servers                 | 64. <input type="checkbox"/> Suites                                   |
| 20. <input type="checkbox"/> Print Servers                            | 65. <input type="checkbox"/> Middleware                               |
|   | 66. <input type="checkbox"/> Document Management                      |
|   | 67. <input type="checkbox"/> Database Server                          |
|   | 68. <input type="checkbox"/> Site Metering Tools                      |
|   | 69. <input type="checkbox"/> Computer-Integrated Telephony (CIT)      |
| <b>101 B INTERNETWORKING</b>  | <b>A 106 B WIDE-AREA NETWORK EQUIPMENT &amp; SERVICES</b>             |
| 21. <input type="checkbox"/> Bridges                                  | 70. <input type="checkbox"/> Frame Relay Equip./Services              |
| 22. <input type="checkbox"/> Routers                                  | 71. <input type="checkbox"/> Modems                                   |
| 23. <input type="checkbox"/> Bridge/Router                            | 72. <input type="checkbox"/> FT-1/T-1/T-3 Multiplexers                |
| 24. <input type="checkbox"/> Gateways                                 | 73. <input type="checkbox"/> FT-1/T-1/T-3 Services                    |
| 25. <input type="checkbox"/> Intelligent Hubs/Stackables              | 74. <input type="checkbox"/> SONET                                    |
|   | 75. <input type="checkbox"/> Inverse Multiplexers                     |
|   | 76. <input type="checkbox"/> SMDS                                     |
|   | 77. <input type="checkbox"/> Asynchronous Transfer Mode               |
|   | 78. <input type="checkbox"/> Diagnostic/Test Equipment                |
|   | 79. <input type="checkbox"/> DSU/CSU                                  |
|   | 80. <input type="checkbox"/> VSAT/Satellite                           |
|   | 81. <input type="checkbox"/> ISDN Equipment & Services                |
|   | 82. <input type="checkbox"/> PBXs                                     |
|   | 83. <input type="checkbox"/> Voice Mail/Response                      |
|   | 84. <input type="checkbox"/> Videoconferencing                        |
|   | 85. <input type="checkbox"/> Leased Lines                             |
|   | 86. <input type="checkbox"/> Switched Data                            |
|   | 87. <input type="checkbox"/> E-mail/On-line Services                  |
|   | 88. <input type="checkbox"/> 800/900/MTS Services                     |
|   | 89. <input type="checkbox"/> Virtual Networks                         |
|   | 90. <input type="checkbox"/> Outsourcing/Systems Integration Services |
|   | 91. <input type="checkbox"/> Education/Training Services              |
|   | 92. <input type="checkbox"/> None of the above (1-91)                 |
| <b>102 B COMPUTERS/PERIPHERALS</b>                                    |   |
| 26. <input type="checkbox"/> Laptops/Notebooks/Sub-Notebooks          |   |
| 27. <input type="checkbox"/> Micros/PCs                               |   |
| 28. <input type="checkbox"/> Minis                                    |   |
| 29. <input type="checkbox"/> Mainframes                               |   |
| 30. <input type="checkbox"/> Workstations                             |   |
| 31. <input type="checkbox"/> Terminals                                |   |
| 32. <input type="checkbox"/> Printers                                 |   |
| 33. <input type="checkbox"/> Cluster Controllers                      |   |
| 34. <input type="checkbox"/> Monitors                                 |   |
| 35. <input type="checkbox"/> Fax/Modem Boards                         |   |
| <b>103 B REMOTE/WIRELESS COMPUTING</b>                                |   |
| 36. <input type="checkbox"/> PDAs                                     |   |
| 37. <input type="checkbox"/> PCMCIA Devices                           |   |
| 38. <input type="checkbox"/> Wireless Data Services                   |   |
| 39. <input type="checkbox"/> Wireless Data Equipment                  |   |
| 40. <input type="checkbox"/> Wireless LANs                            |   |
| 41. <input type="checkbox"/> Cellular Equipment & Services            |   |
| <b>104 B INTERNET/ELECTRONIC COMMERCE</b>                             |   |
| 42. <input type="checkbox"/> Internet Access Providers                |   |
| 43. <input type="checkbox"/> Firewalls                                |   |
| 44. <input type="checkbox"/> Web Servers/Browsers                     |   |
| 45. <input type="checkbox"/> Internet Software Tools                  |   |

# NetworkWorld

THE NEWSWEEKLY OF ENTERPRISE NETWORK COMPUTING

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9501

## 6 What is the total number of LANs, workstations/nodes at this location/ in your organization?

### At this location:

- | LANs                                      | Workstations/<br>Nodes   |
|---|--------------------------|
| 1. <input type="checkbox"/> 5,000+        | <input type="checkbox"/> |
| 2. <input type="checkbox"/> 1,000 - 4,999 | <input type="checkbox"/> |
| 3. <input type="checkbox"/> 100 - 999     | <input type="checkbox"/> |
| 4. <input type="checkbox"/> 50 - 99       | <input type="checkbox"/> |
| 5. <input type="checkbox"/> 10 - 49       | <input type="checkbox"/> |
| 6. <input type="checkbox"/> 1 - 9         | <input type="checkbox"/> |

### Entire organization:

- | LANs                                      | Workstations/<br>Nodes   |
|---|--------------------------|
| 1. <input type="checkbox"/> 5,000+        | <input type="checkbox"/> |
| 2. <input type="checkbox"/> 1,000 - 4,999 | <input type="checkbox"/> |
| 3. <input type="checkbox"/> 100 - 999     | <input type="checkbox"/> |
| 4. <input type="checkbox"/> 50 - 99       | <input type="checkbox"/> |
| 5. <input type="checkbox"/> 10 - 49       | <input type="checkbox"/> |
| 6. <input type="checkbox"/> 1 - 9         | <input type="checkbox"/> |

## 7 Check ALL that apply in Columns A and B:

### A. The following network platforms are currently installed:

### B. The following network platforms are planned for purchase:

- |   |   |
|---|---|
| <b>A 55 B NETWORK ARCHITECTURES</b>                       | <b>A 57 B LAN ENVIRONMENT</b>                             |
| 01. <input type="checkbox"/> SNA                          | 22. <input type="checkbox"/> 4M Token Ring                |
| 02. <input type="checkbox"/> DECnet                       | 23. <input type="checkbox"/> 16M Token Ring               |
| 03. <input type="checkbox"/> TCP/IP                       | 24. <input type="checkbox"/> Ethernet                     |
| 04. <input type="checkbox"/> Novell IPX/SPX               | 25. <input type="checkbox"/> 100M Ethernet                |
| 05. <input type="checkbox"/> APPC/APPN/LU 6.2             | 26. <input type="checkbox"/> StarLAN                      |
| 06. <input type="checkbox"/> NETBIOS                      | 27. <input type="checkbox"/> FDDI                         |
| 07. <input type="checkbox"/> AppleTalk                    | 28. <input type="checkbox"/> LocalTalk                    |
| 08. <input type="checkbox"/> NFS                          | 29. <input type="checkbox"/> 10Base-T                     |
| 09. <input type="checkbox"/> Other (please specify) _____ | 30. <input type="checkbox"/> ATM                          |
|   | 31. <input type="checkbox"/> Other (please specify) _____ |
| <b>A 56 B NETWORK OPERATING SYSTEM</b>                    | <b>A 58 B COMPUTER OPERATING SYSTEM</b>                   |
| 10. <input type="checkbox"/> Microsoft (LAN Manager)      | 32. <input type="checkbox"/> DOS                          |
| 11. <input type="checkbox"/> Novell (NetWare 2.X, 3.X)    | 33. <input type="checkbox"/> Unix/Xenix/AIX               |
| 12. <input type="checkbox"/> Novell (NetWare 4.X)         | 34. <input type="checkbox"/> OS/2                         |
| 13. <input type="checkbox"/> Windows NT                   | 35. <input type="checkbox"/> OS/2 Warp                    |
| 14. <input type="checkbox"/> Windows NT/Advanced Server   | 36. <input type="checkbox"/> IBM MVS                      |
| 15. <input type="checkbox"/> LocalTalk (AppleTalk)        | 37. <input type="checkbox"/> IBM VM                       |
| 16. <input type="checkbox"/> Banyan (VINES)               | 38. <input type="checkbox"/> Digital VMS                  |
| 17. <input type="checkbox"/> IBM (LAN Server)             | 39. <input type="checkbox"/> Macintosh                    |
| 18. <input type="checkbox"/> IBM (PC LAN Program)         | 40. <input type="checkbox"/> Windows                      |
| 19. <input type="checkbox"/> Artisoft (LANtastic)         | 41. <input type="checkbox"/> Windows 95                   |
| 20. <input type="checkbox"/> Digital (Pathworks)          | 42. <input type="checkbox"/> X Window System              |
| 21. <input type="checkbox"/> Other (please specify) _____ | 43. <input type="checkbox"/> Solaris                      |
|   | 44. <input type="checkbox"/> Other (please specify) _____ |
|   | 45. <input type="checkbox"/> None of the above (1-44)     |

## 8 For which areas outside of North America do you have purchase influence? (check all that apply)

- |                                    |   |   |
|------------------------------------|---|---|
| 1. <input type="checkbox"/> Europe | 3. <input type="checkbox"/> South America | 5. <input type="checkbox"/> Middle East |
| 2. <input type="checkbox"/> Asia   | 4. <input type="checkbox"/> Australia     | 6. <input type="checkbox"/> None        |

## 9 Do you have or plan to install client/server networks? ☐ Yes ☐ No

## 10 Which of the following hardware platforms are installed/planned in your company? (check all that apply)

- |            | Mainframes               |                          | Minis                    |                          |
|------------|--------------------------|--------------------------|--------------------------|--------------------------|
|            | A - Installed            | B - Planned              | C - Installed            | D - Planned              |
| 1. IBM     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Amdahl  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Cray    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Hitachi | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Unisys  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|            |                          |                          | <input type="checkbox"/> | <input type="checkbox"/> |
|            |                          |                          | <input type="checkbox"/> | <input type="checkbox"/> |
|            |                          |                          | <input type="checkbox"/> | <input type="checkbox"/> |
|            |                          |                          | <input type="checkbox"/> | <input type="checkbox"/> |

### Which of the following do you have installed/planned: (USE NUMBERS ONLY)

	At this location:		Entire organization:	
	E - Servers	F - Clients/Nodes	G - Servers	H - Clients/Nodes
1. Power PC				
2. Power Macintosh				
3. Macintosh (Other)				
4. Pentium-based				
5. 80486-based				
6. 80386-based				
7. 80286-based				
8. RISC-based workstations				
9. Other				

## 11 What is the estimated value of networking equipment and services that you help specify, recommend or approve annually? (check one only)

- |  |  |  |
|--|--|--|
| 01. <input type="checkbox"/> \$10 million or more          | 05. <input type="checkbox"/> \$10 million - \$19.9 million | 09. <input type="checkbox"/> \$250,000 - \$499,999 |
| 02. <input type="checkbox"/> \$50 million - \$99.9 million | 06. <input type="checkbox"/> \$5 million - \$9.9 million   | 10. <input type="checkbox"/> \$249,999 or less     |
| 03. <input type="checkbox"/> \$25 million - \$49.9 million | 07. <input type="checkbox"/> \$1 million - \$4.9 million   | 11. <input type="checkbox"/> None of the above     |
| 04. <input type="checkbox"/> \$20 million - \$24.9 million | 08. <input type="checkbox"/> \$500,000 - \$999,999         |  |

## 12 Estimated gross annual revenue of your entire company/institution: (check one only)

- |  |  |  |
|--|--|--|
| 1. <input type="checkbox"/> \$10 billion or more             | 4. <input type="checkbox"/> \$100 million to \$499.9 million | 7. <input type="checkbox"/> \$5 million to \$9.9 million |
| 2. <input type="checkbox"/> \$1 billion to \$9.9 billion     | 5. <input type="checkbox"/> \$50 million to \$99.9 million   | 8. <input type="checkbox"/> \$4.9 million or less        |
| 3. <input type="checkbox"/> \$500 million to \$999.9 million | 6. <input type="checkbox"/> \$10 million to \$49.9 million   | 9. <input type="checkbox"/> None of the above            |

## 13 Estimated number of employees at this location/in entire organization:

- | At this location:                         | Entire organization:                      |
|---|---|
| 1. <input type="checkbox"/> Over 10,000   | 1. <input type="checkbox"/> Over 10,000   |
| 2. <input type="checkbox"/> 5,000 - 9,999 | 2. <input type="checkbox"/> 5,000 - 9,999 |
| 3. <input type="checkbox"/> 2,500 - 4,999 | 3. <input type="checkbox"/> 2,500 - 4,999 |
| 4. <input type="checkbox"/> 1,000 - 2,499 | 4. <input type="checkbox"/> 1,000 - 2,499 |
| 5. <input type="checkbox"/> 500 - 999     | 5. <input type="checkbox"/> 500 - 999     |
| 6. <input type="checkbox"/> 499 or less   | 6. <input type="checkbox"/> 499 or less   |



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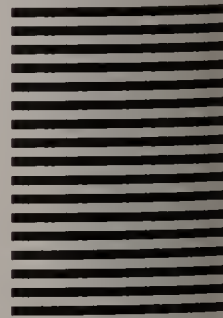
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# WANs & Internetworking

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## Briefs

■ **Azure Technologies, Inc.** is now shipping an enhancement to its ExpertPharaoh series of WAN analysis systems.

The MultiTrak system is designed to **monitor up to eight WAN channels** running the Multilink PPP protocol.

MultiTrak ExpertPharaoh is available in two-, four-, six- and eight-port versions ranging in price from \$12,995 to \$25,995.

Azure: (508) 435-3800.

■ **MCI Communications Corp.** said it will include *Simware, Inc.*'s **A2B remote LAN access client software** as an option on its HyperStream Remote LAN Dial (RLD) service. HyperStream RLD enables users to access frame relay nets using V.34 modems. Recent enhancements to Ottawa-based Simware's A2B allow users to employ A2B with any vendor's remote access hardware (NW, Aug. 14, page 21).

■ **Sprint Telecommunications Venture**, the partnership between Sprint Corp. and three cable companies for wire-line and wireless local and long-distance services, last week announced that it will resell PageNet, Inc. **paging services**. Sprint expects to kick off the efforts by marketing the services to its own customer base early next year.

■ Last week, **Computerm Corp.** announced a new **mainframe channel extension system** that supports Asynchronous Transfer Mode, T-3 line speeds and Enterprise Systems Connection (ESCON) links to the mainframe.

The Virtual Mainframe Channel (VMC) 8200 connects directly to any standard ATM switch and extend mainframe channels over unlimited distances.

The VMC 8200 will be available Jan. 31 starting at \$50,000. An 8200 with an ATM and ESCON interface starts at \$86,000.

Computerm: (412) 391-7804.

## Newbridge box links to 'Net, corporate LANs

By Tim Greene  
Herndon, Va.

Corporate network managers continue to benefit from access devices that are designed for Internet service providers but double as LAN access devices for telecommuters and remote offices.

Newbridge Networks, Inc. has the latest such offering, the 38010 MainStreet Access Service Platform, which is scheduled to ship in the first quarter.

The 38010 was designed to plug a hole in the Newbridge product line by giving Internet service providers a device to gather dial-up calls from users and drop them onto a frame relay trunk.

But Newbridge has also developed a LAN interface that makes the 38010 a possible answer for users that want to concentrate traffic from their remote offices onto a single interface to the corporate Ethernet.

That parallels the history of products from Ascend Communications, Inc., particularly the MAX 4000 — designed for Internet service providers but now making inroads among corporate users with telecommuting programs.

Newbridge's 38010 will take in dial-up traffic aggregated by a public carrier onto ISDN Primary Rate Interface lines. It will interface initially with Ethernet LANs, but by the end of 1996, an ATM LAN card will also be available.

In a corporate network, the device would be fed by PRI or T-1 lines from a private branch exchange.

Users in remote offices or traveling would dial in over analog phone lines or ISDN Basic Rate Interface lines (see graphic).

A corporation rolling out a telecommuting program would be a prime private user, according to Tim Burke, an analyst with The Yankee Group in Boston.

"Instead of having racks of modems and maybe a couple of racks of ISDN devices, you put them all together. It's nice and clean," he said.

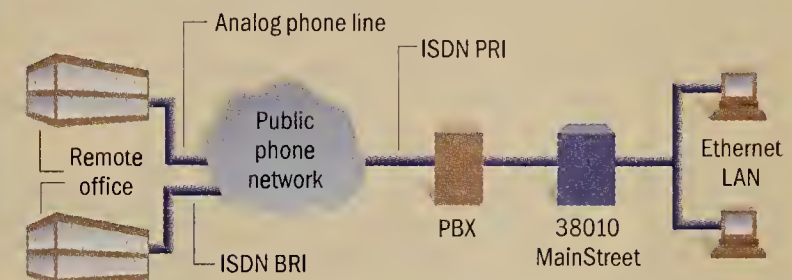
As an access platform for an Internet service provider, the 38010 — rather than interfacing with a LAN — would have frame relay interfaces with carrier switches.

Users would still dial in via analog or ISDN calls, and a local exchange carrier would put the traffic on a PRI line to a service provider's 38010.

Carriers that already have Newbridge frame relay or ATM switches, such as the 36120 MainStreet, the 36150 MainStreet or

### Just dial in over MainStreet

Newbridge Networks' 38010 MainStreet will let remote users dial in to a corporate Ethernet LAN. ATM interfaces are due later next year.



the 36170 MainStreet, would be attracted to the 38010 because an all-Newbridge net could be managed from a single platform.

The 38010 chassis has 25 slots, 24 of which can be used for any

mix of T-1 frame relay cards, ISDN PRI cards or integral modem cards. Each modem card has 12 internal ports.

Pricing has not been set yet.

©Newbridge: (703) 834-3600.

## WAN MONITOR

### Looking back on a year in frame relay

**A**t the end of each year, Santa asks whether you have been naughty or nice. But if you are a product manager, he asks if you've developed enough new service options to keep your customers happy.

Carriers have had a particularly busy year in frame relay, and product managers should find a nice plump stocking underneath the Christmas tree to thank them for their efforts.

Here's a look back at frame relay goodies released this year. Nearly all the carriers have enhanced access options to include digital and/or analog dial access. AT&T has offered global analog dial access via X.25 for two years, but late last month, it augmented this option with ISDN dial access via the carrier's Software Defined Network service. Users gain all the functionalities associated with SDN and the price breaks, as well, to dial in to a frame relay port.

Meanwhile, MCI launched a complete suite of analog and ISDN services, including PPP, telnet, X.25, ISDN and switched 56K bit/sec.

Sprint's ISDN Basic Rate Interface and switched 56 access options, which had been available for backup applications, were expanded to include general dial access applications Cable & Wireless, Inc. launched analog dial access, including PPP and X.25, plus ISDN BRI and switched 56K bit/sec for backup applications.

In April, AT&T made public revised pricing for frame relay, raising the cost of port connections and substantially lowering the cost of permanent virtual circuits (PVC) to encourage direct connectivity between locations. MCI also revised its pricing structure, eliminating the mileage bands on PVCs. MCI remains the only carrier to offer a

usage-based option.

Sprint repositioned its zero committed information rate service, renaming it Burst Express and adding performance guarantees and a packaged price option for multiple PVCs from a 56K bit/sec port. Cable & Wireless lowered its high-speed PVC rates by 37% and its high-speed port connection rates by 12%.

Cable & Wireless and Sprint added frame relay access devices to their managed service programs, providing the equipment and all the management and maintenance of the network.

Sprint also became the first carrier to make seamless frame relay-to-ATM service interworking available.

This means a frame relay location can directly communicate with an ATM location and the WAN service provides all the necessary protocol conversion. All the carriers are now

planning to offer frame relay-to-ATM service interworking because it provides end users with investment protection and the ability to operate hybrid networks.

All the carriers now offer some form of network management reports, either on-line or on hard copy.

Most carriers have not changed their offerings, but MCI has enhanced its HyperStream service to include SNMP reports, while CompuServe has launched new customer network reports. Sprint is unique in that it offers these reports as part of its standard service.

Briere is president and Heckart is director of broadband with TeleChoice, Inc., a consultancy in Verona, N.J. They can be reached at [danny\\_briere@telechoice.com](mailto:danny_briere@telechoice.com) or [christine\\_heckart@telechoice.com](mailto:christine_heckart@telechoice.com).



**Daniel Briere and  
Christine Heckart**



# You don't need an ACD to run a call center

*But Centrex and server solutions also have drawbacks, so wake up from your dream of huge savings and shop around.*

By David Rohde

Let's say your company needs to set up an inbound telephone call center integrated with customer databases and client/server applications, but it balks at the high prices of automatic call distributors (ACD).

Whisper about that problem to your local phone company and you'll probably be presented with one of two alternatives. Either the telephone company will offer to set you up with a central office (CO)-based call distribution system or it will pitch third-party software to turn a PC server into a premises ACD.

party vendor Teloquent Communications Corp. calls a PhoneServer, you could wind up congratulating yourself for achieving database integration and screen pops worthy of the largest catalog call center.

But first you'll have to install ISDN lines and probably pay usage charges for each call center agent on the network. And you'll need to get comfortable with the idea of having a PC operating system instead of a telephone switch control your calls — a leap that many telecommunications managers are not yet prepared to make.

the functionality you require.

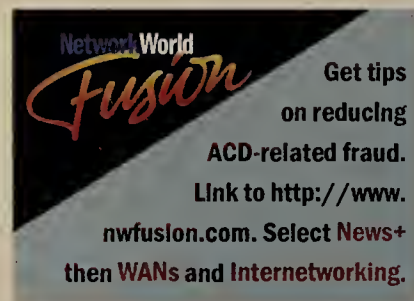
If your local CO relies on AT&T's 5ESS switch, ask your carrier whether it employs AT&T's Pinnacle system, which enables CO ACD. If your local CO relies on Nortel's flagship DMS-100 CO switch, ask whether it has installed DMS Meridian ACD, which emulates the call center capabilities of Nortel's Meridian 1 PBX.

Even then, make sure the CO has upgraded to a recent AT&T or Nortel software release that provides management reporting, something initial ACD releases lacked. "To give someone ACD capability and not the MIS statistics and reports is kind of worthless," said Dave Moring, call center application manager for Bell Atlantic Corp.'s Large Business Services unit.

AT&T's most recent software version for the 5ESS — Release 10 — shipped in June and provides increased information availability to call center agents, said Robert Rosenberg, president of Insight Research Corp., a Livingston, N.J., consulting firm.

## CO bounceback

But rather than waiting for a telephone company upgrade, Number Nine's Fusee chose Teloquent's Distributed Call Center (DCC). The software package harnesses the ISDN D channel to provide the call signaling and synchronize the arrival of data on an agent's PC screen with the arrival of a phone call.



The DCC server software operates on a Unix platform, while its Windows-based client software supports the Windows Dynamic Data Exchange capability on agent desktops. That enables individual agents to use caller data collected by DCC in their own applications for order entry, cross-selling, help desk or other call center functions.

fort zone of telecommunications management, where outages are rare. "I've been concerned because our box locks up once every two weeks," she said.

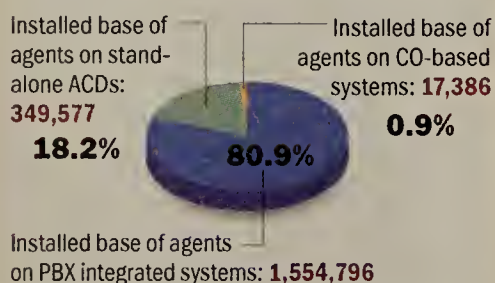
Kelly Bevan, Teloquent's vice president of marketing, acknowledged the difficulty but noted that users now can network redundant PhoneServers to cut downtime.

## A slow start

Teloquent announced the first version of its product in April 1991. But it was not until

## STARTING SMALL

Fewer than 1% of call center agents operate off a central office-based call distribution system.



Figures based on 44,820 installed systems in 1993.

SOURCE: THE PELORUS GROUP, RARITAN, N.J.

Both solutions enable you to avoid locking into a telephone switch vendor's proprietary hardware scheme, and they both offer terrific scalability. But before you sign on, it's best to put aside your dreams of saving huge sums of money and dodging administrative headaches.

If you go with CO-based ACD, also known as Centrex ACD, you may find yourself more deeply involved in the obscure world of software re-releases for CO switches than you ever wanted or needed to be. Unless your local CO has upgraded to the proper release from AT&T or Northern Telecom, Inc., you might find that Centrex does little more than treat your call center as a glorified hunt group, where calls are bounced among agents until one of them picks up the phone. Some Centrex ACD offerings provide bare-bones reporting capabilities but almost no computer-telephone integration.

On the other hand, if you buy software for what leading third-

party vendor Teloquent Communications Corp. calls a PhoneServer, you could wind up congratulating yourself for achieving database integration and screen pops worthy of the largest catalog call center.

Until earlier this year, Number Nine Visual Technology, Inc. in Lexington, Mass., relied on NYNEX Corp.'s UCD offering to feed calls to 30 agents handling two inbound phone numbers — one for sales and one for technical support. "The problem was I had no way of knowing how many calls we were getting or how many were abandoned," said Sanford Fusee, Number Nine's MIS manager.

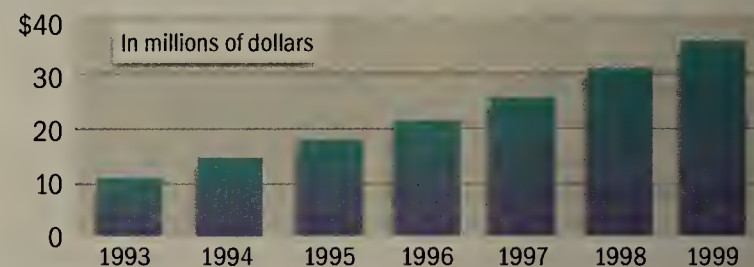
Rudimentary UCD or even Centrex ACD systems also leave the caller no option to transfer to an automated attendant or leave a voice message once they are in a call queue, Fusee added.

If you want to avoid these problems, it may come down to whether your local CO switch has

To use either of the first two versions of DCC, each individual agent and supervisor must obtain an ISDN Basic Rate Interface to the local CO. Using ISDN, the PhoneServer bounces the call back to the CO with routing instructions. The CO switch then puts the call on the selected agent's phone.

## ACD services grow steadily

Telephone companies' revenue from central office-based ACD services:



SOURCE: THE PELORUS GROUP, RARITAN, N.J.

Gary Andresen, a call center analyst with Dataquest, Inc. in San Jose, Calif., said users can count on paying about \$2,500 to \$3,000 per agent desktop for Teloquent's DCC. With traditional ACDs, users frequently bump up against a ceiling, where they have to buy a new ACD cabinet or module to boost the size of the call center. With DCC, "at least you don't have this threshold where the next agent costs \$50,000," he said.

But either way, call centers are notorious for racking up hidden telecommunications costs. A traditional ACD-based call center usually subscribes to a large number of local access trunks to hold callers in queue. With DCC, the added cost comes in ISDN installation and usage charges.

Debbie McDermid, manager of telecommunications at Case Corp. in Racine, Wis., migrated to DCC in January to enable the company's dealers of agricultural and construction equipment to call in to the company's North American Parts Operation for technical assistance.

"At first it was less [money]," said McDermid, comparing her DCC installation with the ACD alternatives she evaluated. "But when you look at the ongoing cost of ISDN, over the five-year life of the contract, it's probably a wash."

And using DCC has taken McDermid out of the usual com-

1993 that the product became generally available, and even then, sales were slow.

"When they first got going, the problem that they had was that the infrastructure for ISDN BRI wasn't there," Andresen said. "Now that's resolved, as long as you're not in Podunk."

But Teloquent continued to pursue marketing arrangements with the RBOCs, which were expected to offer DCC as a solution to users that did not want to splurge on an ACD.

Analysts noted that selling through RBOCs works for vendors such as Nortel, which has sold truckloads of PBX systems via that method, but not for vendors, such as Teloquent, selling leading-edge solutions based on PC software rather than telephony hardware. "You have to do a missionary sale [with DCC], and the RBOCs are not equipped to do that," said Pelorus analyst McGee-Smith.

Number Nine's Fusee said that even after the sale, he had to expend untold hours with NYNEX on the ISDN installation, particularly for a single remote agent working out of her home in Nashua, N.H. But the effort was worth it, he said. Now the agent "simply makes a packet call to the server, and it sets up an X.25 line to her."

He added: "This system will grow with us, no matter how big we get." ■



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# How well does your network perform these days?

WORKGROUP SOLUTIONS REMOTE ACCESS SOLUTIONS STACKABLE SOLUTIONS NETWORK MANAGEMENT SWITCH



A large, stylized 'X' mark, likely representing a failed or poor network performance.



# network let functions?

DOES IT LET YOU EASILY  
MULTIPLY WORKGROUP  
PERFORMANCE BY GIVING  
YOU AFFORDABLE SWITCHING  
TO RUN THE APPLICATIONS  
PEOPLE NEED?



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# Net mgmt. vendors prove to be naughty and nice

Quarterly product shipment review shows SunSoft and AT&T are floundering, while Cabletron and IBM are on track.

By Ben Heskett

For SunSoft, Inc. and AT&T, the Christmas season cannot come soon enough. The companies can use some holiday cheer, as two of their high-profile products, scheduled for release by year-end, are facing long delays.

According to research done for our quarterly Roll Call chart, which keeps tabs on vendor product and service announcements, planned delivery of SunSoft's Solstice Enterprise Man-

ager has been delayed until next year. The object-based software package for the enterprise has proven to be more difficult to develop than expected, SunSoft officials said.

Separately, AT&T has postponed shipment of OpenView for Windows NT indefinitely, without offering any reasons for the delay. The company was developing the product under a licensing agreement with Hewlett-Packard Co. and as part of its

much-publicized OneVision strategy to provide a consistent set of management tools.

One reason for AT&T's tardiness could be that its telecommunications services, equipment and computer manufacturing businesses are breaking up into three firms. "Any company that is going through something like AT&T is has to reassess all of its development plans and decide what makes

sense for its current business model," said Mary Johnston Turner, an analyst with Northeast Consulting Resources, Inc. in Boston.

Other network management software providers are having better luck. Cabletron Systems, Inc. is on track for the first quarter of 1996 to ship Spectrum 4.0, which will include better distributed application capabilities and case-based reasoning functions.

IBM is also on schedule to deliver SystemView iterations for MVS and OS/2.

Elsewhere in the network product industry, no company may be more relieved than Sybase, Inc. that 1995 is coming to a close. The company was hammered for much of the year by customers, competitors and industry analysts for bugs found in its System 10 flagship database product. The update, System 11, was originally scheduled to ship in the third quarter of this year, but the company held off to test it more fully before releasing it this month. Early reports on the product are good. ■



## THE ROLL CALL



Product	Company	Product description	Announcement	Original delivery plan	Status
<b>HARDWARE</b>					
ATM Access Concentrator-3	ADC Kentrox	ATM access device	March 1995	October 1995	Shipping
SmartSwitch	Cabletron	Switching modules for MMAC and MMAC-Plus hubs	September 1995	H1 1996	On track
DECswitch 900 and RouteAbout	Digital	Routing products	June 1995	Summer 1995	Shipping
● 8272 Token Ring switch	IBM	8-port Token-Ring switch	January 1995	September 1995	Shipping
Collage	Madge Networks	ATM switches	September 1995	H1 1996	On track
● AnyCell 25	Optical Data Systems	ATM backplane and switch modules	June 1995	Q4 1995	Delayed
<b>SOFTWARE</b>					
Acrobat 2.1	Adobe Systems	Multimedia and Web authoring tools	August 1995	September 1995	Shipping
● OpenView on Windows NT	AT&T	Network management software	June 1994	H2 1995	Delayed
Spectrum 4.0	Cabletron	Network management software	October 1995	Q1 1996	On track
● PowerBroker 4.0 (formerly XShell)	Expersoft	New version of ORB supporting object models, including OLE and CORBA	August 1995	December 1995	Q1 1996
CyberAgent Software Development Kit	FTP Software	Intelligent agent software tool kit for the Internet	July 1995	Year-end 1995	Shipping
SystemView for MVS	IBM	Systems and network management software	October 1995	December 1995	On track
SystemView for OS/2	IBM	Systems and network management software	May 1995	Q4 1995	On track
OS/2 Warp Server	IBM	Successor to LAN Server	October 1995	Q1 1996	On track
● Exchange Server	Microsoft	Client/server, Windows NT-based update to Microsoft Mail	June 1994	Beta due year-end 1994	Q1 1996
Oracle7 Release 7.3	Oracle	New version of database with improved parallel processing and data warehouse support	September 1995	Q1 1996	On track
PeopleSoft 5.0	PeopleSoft	Workflow-enabled suite of financial, distribution, human resources and manufacturing applications	September 1995	Year-end 1995	Shipping
R/3 3.0	SAP AG	New release of company's integrated business applications suite that will share data with non-SAP applications.	September 1995	September 1995	Shipping
● Solstice Enterprise Manager	SunSoft	Object-based enterprise management software	January 1995	Year-end 1995	Late 1996
Solaris NEO	SunSoft	Set of tools and network services for building object-oriented, distributed applications	September 1995	October 1995	Shipping
● Sybase IQ	Sybase	Query accelerator that works with the company's database to speed up large data warehousing applications	November 1994	Summer 1995	Q1 1996
● Sybase System 11	Sybase	New version of company's flagship database with improved SMP support	October 1995	Q3 1995	Shipping
Encina 2.0	Transarc	New version of DCE OLTP monitor, with C++ class libraries for object-oriented client applications	September 1995	September 1995	Shipping
<b>SERVICES</b>					
Global X.25	AT&T	9.6K to 56K bit/sec dial-up and dedicated access to AT&T U.S. frame relay net through Infonet X.25 net	June 1995	Q4 1995	Available
AT&T Network Demand Printing Services	AT&T	Print distribution network service	June 1995	Q1 1996	On track
InterSpan T-1 ATM	AT&T	1.5M bit/sec cell-based access to AT&T's ATM backbone	Spring 1995	Q4 1995	Available
Symmetric Digital Subscriber Line chip sets	AT&T Paradyne	Technology giving T-1 capacity to a standard voice phone line	September 1995	December 1995	On track
● Circuit-switched CDPD	GTE Mobilnet	Wireless data service	February 1995	H2 1995	Q1 1996
● TeleSuite	IBM Global Network	Life-like virtual reality videoconferencing service	July 1995	Q4 1995	1996
● Managed Frame Relay Access Device Service	Sprint	SNA over frame relay offering	November 1995	November 1995	Due by year-end
● Missed original ship date					



# Local Networks


**Covering:** Operating systems • LAN management  
Hubs • Switches • Adapters and other equipment

## Briefs

■ **FTP Software, Inc. and Firefox Communications, Inc.** last week announced they are jointly developing **TCP/IP** connectivity products first for NetWare LANs and later for Windows NT LANs.

Products and bundles will ship next year incorporating FTP's OnNet client software and Firefox's NOV\*IX server-based TCP/IP technology. Firefox, based in San Jose, Calif., is developing a system to deploy OnNet from a server and extending it to take advantage of NOV\*IX's centralized management for IP applications. The companies are particularly eyeing Internet and intranet applications.

Firefox: (408) 467-1100; FTP: (508) 685-4000.

■ **Friday Harbor, Wash.-based Cogent Data Technologies, Inc.** has jumped ahead of the Ethernet pack with  the rollout of one of the first repeaters for **100Base-T4** cabling.

The new device allows users to deploy 100M bit/sec fast Ethernet LANs over common Category 3 unshielded twisted-pair wiring, as well as Category 4 and 5 wires. The 100Base-TX standard — which is what most fast Ethernet switches support — requires more expensive Category 5 cabling.

Cogent's 12-port fast Ethernet repeater can be stacked up to five high and offers LEDs for power, collision and activity management.

The repeater costs \$1,998 and is available now.

Cogent: (800) 426-4368.

■ **Wireless LAN vendor Proxim, Inc.**, based in Mountain View, Calif., has announced that it will team with adapter vendor **AMP, Inc.** to provide a family of 2.4-GHz, frequency-hopping, spread-spectrum **wireless LAN** products.

The product line will include PCMCIA and ISA adapter cards, as well as a compact network access point for Ethernet LANs.

Pricing and availability has not yet been determined.

Proxim: (415) 960-1630.

## 3Com pitches PACE for multimedia over E-net

By Jodi Cohen

Santa Clara, Calif.

Customers unwilling to put multimedia applications on hold until Asynchronous Transfer Mode technology matures got a boon last week when 3Com Corp. rolled out its first Ethernet switches supporting a new ATM-like prioritization scheme for handling mixed traffic.

Priority Access Control Enabled (PACE) technology — announced in October 1994 — lets net managers run real-time voice and video applications over switched 10M and 100M bit/sec Ethernet links. The technology is designed to make sure delay-sensitive traffic gets a higher priority.

As expected, 3Com will offer PACE in its SuperStack LinkSwitch 1000 and 3000 workgroup switches, EtherLink adapters, NetBuilder II routers, LANplex data center switches, CellPlex ATM switches, and switching modules for the LinkBuilder and ONcore chassis-based hubs (NW, Dec. 11, page 6).

Michael Howard, president of the Infonetics Research, Inc. consultancy in San Jose, Calif., said PACE-based Ethernet products could appeal to customers worried about the complexity of installing and working with ATM. "PACE allows users to put real-time video applications across Ethernet without having to buy into ATM," he said.

To take advantage of the new 3Com technology, customers must deploy Ethernet switches that include PACE-enabled silicon and software, said Robert

Roman, 3Com's manager of business development.

Also, they must download PACE software changes for any device attached to the switch. But Roman pointed out that net managers will not have to swap out adapter cards, which is necessary with other multimedia technologies such as ATM, isoc Ethernet or 100VG-AnyLAN.

In addition to adding PACE capabilities to its existing switches, 3Com announced new versions of its LinkSwitch products that will support PACE. The 12-port LinkSwitch 1000 offers 12 switched 10Base-T ports and a 100Base-T port for server or backbone connections.

3Com also rolled out a copper-based model of the LinkSwitch 3000 that offers an optional 100M bit/sec copper or fiber link and eight switched

### 3COM'S PACE PRODUCT PLAN

December 1995

- ▶ PACE software for the 24-port LinkSwitch 1000
- ▶ 12-port LinkSwitch 1000 Ethernet/fast Ethernet workgroup switch with PACE hardware and software
- ▶ PACE software for multicast support in NetBuilder II routers
- ▶ PACE-ready hardware for the six-port LinkSwitch 3000

Second-quarter 1996

- ▶ 8-port LinkSwitch 3000 TP fast Ethernet switch with PACE hardware and software
- ▶ PACE software for the six-port LinkSwitch 3000
- ▶ PACE-enabled drivers for 10M/100M bit/sec and EtherLink III PCI fast Ethernet adapters
- ▶ PACE software with multicast support for LANplex data center LAN switches

Second half of 1996

- ▶ PACE-enabled drivers for EtherLink III family of ISA adapters
- ▶ PACE support in the LinkBuilder MSH and ONcore chassis-based system with integrated LinkSwitch 1000/3000 technology
- ▶ PACE hardware support in the LANplex data center LAN switches
- ▶ PACE technology support in the Cellplex ATM switches

100Base-T ports.

The new 12-port LinkSwitch 1000 is available for \$3,975. The LinkSwitch 3000 100Base-T switch costs \$10,000 and will be available in April. All PACE software downloads via 3Com's bulletin board are free.

©3Com: (408) 764-5000.

### SCO'S PRODUCT TIMETABLE

December 1995

SCO completes purchase of Novell's UnixWare product.

Q1 1996

Will introduce next version of UnixWare, code-named Eiger.

First half of 1996

Will release next version of OpenServer, code-named Comet. Will also unveil set of development tools to create applications for the upcoming Gemini product, as well as for UnixWare and OpenServer products.

1997

Will merge UnixWare and OpenServer products into an offering code-named Gemini.

## SCO talks up the new UnixWare

By Ben Heskett

Santa Cruz, Calif.

The Santa Cruz Operation, Inc. (SCO) last week aired plans to introduce new versions of its OpenServer and UnixWare operating systems next year, the step before merging them in 1997 into what one company official called "the ultimate Unix product."

The plan marked SCO's first statement about the fate of UnixWare and OpenServer since the company agreed to buy Novell, Inc.'s UnixWare and Unix source code in September for about \$60 million in stock.

SCO and Novell are teaming to help each other compete better with Microsoft Corp. and its increasingly popular Windows NT operating system by closely linking NetWare's file and print services with SCO's Unix expertise and Unix sales channel.

UnixWare 2.1, code-named Eiger, will offer users a server-based alternative to NetWare in the Unix realm, said Doug Michels, SCO's executive vice president and chief technical officer. The upgrade will provide all of the NetWare file, print and directory services for Windows clients

See SCO, page 24

## HP extends line of LAN analyzers

By Jim Duffy

Palo Alto, Calif.

Hewlett-Packard Co. last week unveiled new and enhanced management tools that are designed to help users analyze large LAN internets based on a mix of topologies.

The additions to HP's NetMatrix line of analysis applications include support for FDDI LANs, large token-ring nets and end-to-end monitoring of Ethernet segments.

Analysts said the only difference between HP's new offerings and those from competitors Network General Corp., Frontier Software Development, Inc., Axon Networks, Inc. and Network Application Technology, Inc., is that HP's LAN analyzer products work closely with the company's OpenView enterprise management platform.

The new FDDI LanProbe device, which supports most of the RFC 1757 Remote Monitoring (RMON) Management Information Base, can monitor 36 network performance characteristics simultaneously. The probes can sport single-attached and dual-attached FDDI fiber connections, and shielded and unshielded twisted-pair links.

See HP, page 24

**There's plenty more on-line, including:**

- ▶ A primer on deciding how to upgrade your LAN's bandwidth
- ▶ A look at obstacles to bringing ATM to the desktop
- ▶ Primers and quick reference guides for fast Ethernet

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## HP

Continued from page 23

Enhancements to HP's NetMetrix token-ring monitors include the addition of a mid-level manager processor and an improved fault isolation application and a new performance measurement application.

The mid-level manager is a computer that collects, analyzes and filters data from HP LanProbes scattered across token rings and forwards the data to a Unix-based NetMetrix console.

At the console, applications use the data from the mid-level manager to represent token-ring network behavior. The NetMetrix Load Monitor for Token Ring, which shows protocol distribution and conversation statistics, now has a "zoom" capability that allows users to correlate network events, scroll through historical data or drill down for more information. The new NetMetrix Internetwork Response Monitor for Token Ring application measures latency of token-ring traffic across WAN links.

For end-to-end monitoring of Ethernet segments, HP rolled out NetMetrix Probe hardware. It provides protocol distribution information, conversation statistics and more.

The FDDI LanProbe ranges in price from \$9,995 to \$19,995, depending on memory and connectivity options. The token-ring probes cost from \$3,035 to

### ENHANCEMENTS TO HP'S NETMETRIX LAN ANALYSIS LINEUP

- ▶ HP FDDI LanProbe — A line of FDDI ring monitors
- ▶ Mid-level management processor as well as fault and performance improvements for token-ring management products
- ▶ HP NetMetrix probe — An end-to-end management tool for Ethernet segments

\$3,435, and the applications cost \$1,000 to \$4,000. The NetMetrix Probe for Ethernet links costs \$1,000.

©HP: (800) 452-4844.

## SCO

Continued from page 23

without the need for a separate NetWare server.

The next version of OpenServer, code-named Comet, will include increased memory support, bootable mirrored drive support and the ability to have floating user licenses. In addition, TCP/IP and electronic mail utilities will be updated.

SCO also is working on a tool kit that lets application builders develop programs that work with OpenServer and UnixWare.

Programmers can use the tool to get a jump on building applications for SCO's combined OpenServer/UnixWare offering, code-named Gemini.

©SCO: (800) 726-8649.

## NET RESULTS

## Hoping you get a switch in your stocking

**A**s the year comes to a close, we find ourselves reflecting on all that happened in 1995.

On the vendor front, this year was one that involved long-term strategies and industry consolidation through mergers and acquisitions.

Cisco Systems, Inc. and 3Com Corp. lead the way in the acquisitions department, though Cabletron Systems, Inc. made news this year by making its first such purchase.

And although the number of small and midsize players in the internetworking market is shrinking, promising start-ups have emerged that should make an impact during 1996.

This year also was a banner time for technology. There have never been more types of LANs or choices of equipment in the history of networking.

Switching became the preferred platform for everything. Bridging became Layer 2 switching, routing became Layer 3 switching — and anything that was switched was good.

This year was a time when fast Ethernet became a viable technology, that "real" token-ring switching began shipping and

that Ethernet switching became a staple of networks the world over.

In addition, this was the best year FDDI ever had — predominantly driven by FDDI switching. It just goes to show you that the legacy LANs are alive and well.



**Skip MacAskill and Melinda Le Baron**

And then there are the many network managers and end users that have made it through another year, hopefully unscathed.

Many difficult upgrade decisions were made this year in the face of multiple technologies and disinformation.

Faced with many new LAN technologies, an aging installed base and a need for more bandwidth, network managers faced a difficult and sometimes impossible job.

To brighten the holidays for the technically exhausted, we

offer our version of a Christmas classic (sung to the tune of "Jingle Bells"):

*Dashing through the halls*

*Our beepers all alight,*

*Everything is hosed*

*We'll be here all night.*

*Switches blinking red*

*The servers are gone, too,*

*We'll be here till New Year's Eve*

*Before our work is through....*

*Oh! Ethernet, token ring,*

*And F-D-D-I,*

*We're stalwart net managers*

*It's fix the net or die....*

*Oh! Ethernet, token ring,*

*VG-AnyLAN,*

*We should have bought those routers*

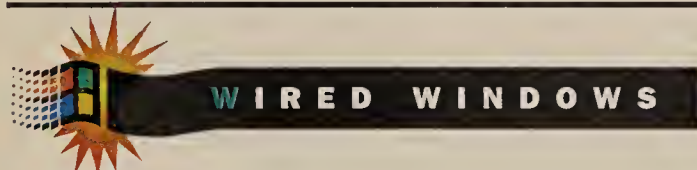
*Yes, we've lost our "Flat Earth"*

*LAN!*

We also would like to send happy and warm holiday greetings to network equipment and software vendors.

And we'd also like to add a special greeting to Cabletron's dynamic duo of Bob and Craig: May your holidays be all that you'd dreamed.

*Le Baron is a research director and MacAskill is a senior research analyst in Gartner Group, Inc.'s Network Computing Infrastructure group. They can be reached by E-mail at inquiry@gartner.com, or contact them by phone at (203) 316-1111.*



## Novell's three-pronged Win95 access plan

**I**f you've finished all your Christmas shopping but you're still on the prowl for a way to connect your Windows 95 PCs to your NetWare network, let's take a look at what Novell, Inc. has in store for you. (Last week, we examined Microsoft Corp.'s offerings.)

Many sites continue to use Novell's NETX shell, a most solid NetWare client tool, even though Novell stopped all development on the NETX shell more than 3 years ago.

The good news is that NETX, with the Novell Open Datalink Interface driver stack, will work with Windows 95. This ensures that any version of NetWare 2.1 and higher can support Windows 95 clients.

While there are sites still using the extended and expanded memory versions of the shell — XMSNETX and EMSNETX —

these should be avoided with Windows 95. The two major drawbacks to using NETX are that it doesn't work with NetWare 4.X's NetWare Directory Services (NDS), and as a real mode shell (needing real mode



**Dave Kearns**

drivers), it takes a large amount of RAM below the still important 640K-byte boundary.

Nevertheless, if your network runs NetWare 2.X or 3.X, you have an extensive logon script, and you use a number of Net-

Ware-specific utilities from third-party developers, then NETX is your most viable option today for Windows 95 NetWare client software.

With NetWare 4.0, Novell introduced a second option, dubbed the Virtual Loadable Module (VLM) DOS redirector client. While a full technical discussion of the differences between a shell and a redirector is beyond the scope of this column, suffice it to say that the switch from NETX to VLM is not a trivial task for network managers.

Even so, NetWare 4.X sites using NDS have to employ VLM. New NetWare 3.12 sites most likely use VLM, and many other 3.X sites have switched to VLM. Like NETX, VLM will connect your Windows 95 PC to the network, also using real-mode

drivers. This means an even larger footprint below 640K bytes, which could present problems — especially with the 16-bit Windows 3.X applications you're probably still using.

As long as you're testing Windows 95, you should also test the next generation of client software from Novell. The next release of NetWare, code-named Green River and due in mid-1996, will emerge along with Client32, a 32-bit protected-mode client, and NIOS, the 32-bit protected mode driver stack.

Novell has announced that there will be Client32 clients for each of the major operating systems — Windows 95, DOS/Windows 3.X, MacOS, OS/2, Windows NT and Unix — but it's not known how many of these actually will ship with Green River. The Windows 95 version, however, is publicly available as an open beta release for you to test right now.

Novell expects to release a refreshed version around Christmas

that fixes many of the really glaring bugs in the first release. One of the stranger anomalies I've heard of in the beta release is that your workstation will stop all activity at midnight, then resume at 1 a.m. — as if nothing had happened.

Neither NETX nor VLM support Windows 95's Long File Names, but Client32 does. None of the Novell clients support Microsoft's File and Print Services for NetWare; you must use a Microsoft client to employ these peer services.

*Kearns is a former network administrator, and now is a free-lance writer and consultant in Austin, Texas. He can be reached at kearns@msn.com.*

### Tip of the week

*If you need to load Btrieve or other DOS terminate-and-stay-resident programs after installing network drivers and before starting Windows 95, put the commands in a file called WINSTART.BAT in the \WINDOWS directory (or the directory in which Windows 95 is installed).*



# Client/Server Applications

**Covering:** Databases • Messaging • Groupware  
Conferencing • Imaging • Multimedia • Development

## Briefs

■ **Menlo Park, Calif.-based Informix Software, Inc.** next month will ship a version of its **OnLine Dynamic Server database for Windows NT**. It will be priced the same as the Unix version: \$1,500 per user for development and \$1,125 per user for run-time. In addition, a version of the company's **OnLine Workgroup Server for Windows NT** is due in the first quarter of 1996. Pricing information was not available.

Informix: (415) 926-6300.

■ **SQL Financials, Inc.** of Atlanta will ship in the first quarter of 1996 a product called **Workflow Manager** that will let customers workflow-enable the company's **SQL Financials** applications or any other Windows application. **Workflow Manager** graphically displays all tasks that have been routed to a user, as well as those that the user may perform on an ad hoc basis.

Workflow Manager will cost from \$25,000 to \$100,000.

SQL Financials: (770) 390-3900.

■ **Hyperion Software, Inc.** in Stamford, Conn., is shipping **Conversion Catalyst**, a utility for importing legacy data into the company's client/server financial applications. It will be included with Hyperion's application suite, which runs on Windows clients, and Windows NT and Unix servers.

Hyperion: (203) 321-3500.

■ **NetManage, Inc.** of Cupertino, Calif., has updated its **NEWT-SDK** software development kit for custom intranet and Internet applications. **NEWT-SDK 5.0**, for use with Visual Basic, C and C++, includes standard Simple Mail Transfer Protocol mail, File Transfer Protocol and terminal-emulation APIs. It supports the WinCGI API, as well as Microsoft Corp. Visual Basic controls and OLE custom controls.

NEWT-SDK 5.0 is now shipping at \$500.

NetManage: (408) 973-7171.

## Cincom blends work flow, development, databases

By John Cox  
Cincinnati

Cincom Systems, Inc. last week unveiled an integrated set of object-oriented tools that rely on Microsoft Corp.'s OLE/Component Object Model (COM) and are designed for building distributed business applications.

The company's Total Framework products let customers redesign work processes, define business objects and data, and provide access to multiple databases. Today, corporate developers typically have to use separate products to build these elements and then link them over a network.

Total Framework now consists of three specialized product groups: Persistence Framework, Assembly Framework and Workflow Framework (see graphic).

The Persistence Framework

features the new Total OODM Cincom-developed, object-relational database, which can store objects comprising text, image, audio and other data types. This framework also supports a single database access language and distributed database functions. That means developers can create an application that calls out via OLE to data that resides on networked relational, object or flat-file databases, rather than having to separately program applications to talk to each database.

Applications designed via the Assembly Framework components can interact with workflow and database services via a set of Cincom OLE Automation Servers, which provide standard OLE interfaces.

"Cincom has taken on the responsibility of building the

### Cincom's Total Framework

- ▶ **Assembly Framework** — Object-oriented development tools for assembling client applications from components; based on Vmark's ObjectStudio Smalltalk tool set but supports any OLE-compliant tool.
- ▶ **Persistence Framework** — An object/relational database, plus an API and distributed database services for accessing and manipulating multiple networked data sources.
- ▶ **Workflow Framework** — A tool set for building server-based workflow systems; based on the Action Workflow Manager.

'Superglue' that makes these various products work together," said Michael Nolan, director of technology at Cap Gemini America, the U.S. systems integration arm of France-based Cap Gemini Sogeti Group. "That's a highly technical, time-consuming problem. Until you get that infrastructure built, you're not able to work on the applications."

Later in 1996, Cincom will add to Total Framework an object request broker that com-

plies with the Object Management Group's Common ORB Architecture. The ORB will let Total Framework applications access server-based objects and legacy applications that have been encapsulated with an object interface.

David Oglesby, director of MIS at General Communications, Inc. (GCI), an Anchorage, Alaska, telecommunications carrier, has just begun using Total Framework.

See Cincom, page 26

## Group reviews electronic mail mgmt. specs

By Carol Sliwa  
Dallas

At long last, the "MADMan MIB" is undergoing a thorough reexamination.

But based on an IETF working group meeting here last month, it looks like the Simple Network Management Protocol-based specifications for managing electronic mail networks are in pretty good health.

The working group that specified the Management Information Base (MIB) for Mail and Directory Management (MADMan), which had been submitted to the Internet Engineering Task Force on Jan. 11, 1994, recently met to consider changes proposed by the Electronic Messaging Association (EMA) and various messaging vendors.

Observers said the changes under consideration are unlikely to force vendors implementing the MADMan specifications in products to do any major reworking of those products.

The recommendations are "all in the line of minor compatible enhancements to improve

the functionality and the utility of the MIB," said Steve Kille, chairman of the IETF MADMan working group as well as president and chief executive officer of ISODE Consortium of Richmond, England.

Niraj Jain, chairman of the EMA's messaging management technical subcommittee and director of messaging server technology at Oracle Corp., said the recommendations fall into two categories: the addition of MIB variables for better monitoring and fault re-

### Applications management

## Platinum recites POEMS plan

By John Cox  
Oakbrook, Ill.

Platinum Technology, Inc. has revealed a delivery schedule for the framework it is building to help companies manage distributed applications across the enterprise.

The repository-based Platinum Open Enterprise Management System (POEMS) is a set of technologies, including APIs, messaging and other services, to integrate an array of what are now stand-alone management

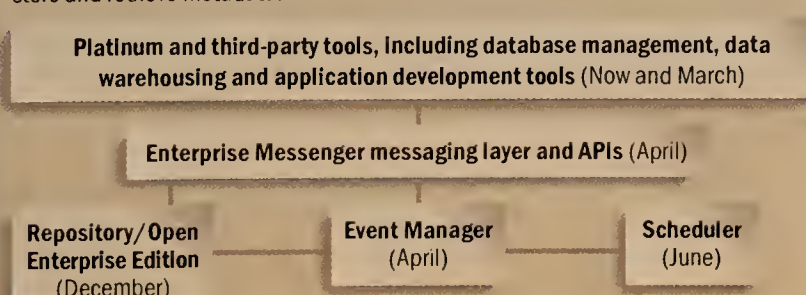
products. Platinum has reached beyond its traditional database management tools to buy small vendors with products for data warehousing, systems management, application development and information access. POEMS is designed to give users a single interface for deploying and managing the full distributed computing environment — databases, systems, applications and so on.

Even though company offi-

See Platinum, page 26

### THE PLATINUM OPEN ENTERPRISE MANAGEMENT SYSTEM

POEMS is a framework for integrating Platinum's database management and application development tools. The tools under POEMS will communicate with one another via the Enterprise Messenger, Event Manager and Scheduler while accessing the repository to store and retrieve metadata.



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porting; and the optional use of SNMP traps for more proactive and earlier reporting of error conditions.

"The feeling of the group was that, while none of the changes being recommended are major, they're more than trivial... so maybe we don't want to move to the draft standard right now," Jain said.

The IETF process requires that a document remain a pro-

See Mgmt. specs, page 26



## Mgmt. specs

Continued from page 25

posed standard for a minimum of six months and a maximum of two years before progressing to the next stage, draft standard, according to Ned Freed, chief development officer at Innosoft International, Inc. of West Covina, Calif., and editor of two of the MADMan specifications.

The MADMan MIB is defined through three requests for comment (RFC). RFC 1565 is the core MIB that allows an administrator to monitor every network application. RFCs 1566 and 1567 are specialized application-specific MIBs relating to message transfer agents and directory services.

Most of the proposed changes relate to RFC 1566, Kille said.

Plans call for the IETF working group to reconvene in March in Los Angeles to decide whether to advance one or more of the RFCs to draft standard or leave them as proposed standards for more comment.

In any event, all three of the RFCs likely will be renumbered since various editorial changes will be made to each of them,

Kille said.

Complicating matters slightly could be the SNMP Version 2 controversy that erupted over attempts to make the standards less costly to implement through the removal of security components.

Although the MADMan specifications are independent of SNMPv2, some additional editorial changes could have to be made to ensure their compatibility with whatever SNMP standard is adopted. ■



IETF's Kille says the recommendations are for only minor changes.

## Cincom

Continued from page 25

"This integration [of tools] is a tremendous advantage to us," he said. "You keep your existing relational databases, which represent a tremendous amount of development work for most companies. You don't have to throw those structures away."

GCI's Ed Spradling, vice president of MIS and administration, said that's important because it will let the company reuse its strategically important billing system as it adds a plethora of new, end-to-end telecommunications services. "The ability

[through Total Framework] to reuse a lot of the code we already have is the key to doing this rapidly," he said.

All three frameworks are

available now. Pricing for all the server components starts at about \$6,000. Client licenses are about \$700 each.

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## Platinum

Continued from page 25

cials promised that key parts of POEMS will arrive over the next few months, some analysts are taking a wait-and-see approach regarding Platinum's technology integration strategy.

"Until [Platinum starts] to deliver on a technology road map and an integration plan, people evaluating Platinum's offerings should evaluate them as point products, not as tool suites," said Mike Merriman, a research director with Gartner Group, Inc., a consultancy in Stamford, Conn.

The first POEMS building block to be released will be the Platinum repository, called Platinum Repository/ Open Enterprise Edition. The offering will hit the market this month, said Andrew "Flip" Filipowski, the company's chairman and chief executive officer.

The product will run on Unix or MVS systems and combine

elements from two repository products acquired by Platinum. The company has tools in five categories — systems management, database management, business intelligence, data warehousing and application development — that will feed information about themselves and the systems they work with into the repository.

"The repository becomes the accumulator of all the information — often called metadata — that our various suites of products collect," Filipowski said.

By April, Platinum will introduce Platinum Enterprise Messenger, which will be a messaging layer and interface into which the various POEMS components and the individual tools

will be linked. Enterprise Messenger will work as a message bus, eliminating the current need for point-to-point interfaces between pairs of tools. Platinum will publish the Messenger's APIs for use by third parties.

Also by April, the firm will roll out Event Manager, technology for controlling the processes and protocol interactions between the POEMS elements. Event Manager will be extended by June with Auto Action, an enterprise scheduling program for automating processes.

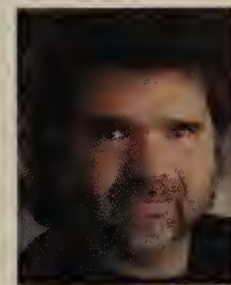
These services and APIs will be used by third-party vendors and Platinum to bring their tools under the POEMS architecture beginning in 1996, said Pete Chargin, director of marketing for Platinum's new Application Life Cycle Solutions division.

Platinum also unveiled plans for a POEMS data management application to let administrators graphically view all database objects in the enterprise and click on them for the appropriate POEMS-compliant tool.

Also, the company introduced Enterprise DBA, an application for managing different brands of databases from a single point. It will be the first product designed to work as part of the POEMS architecture.

The Enterprise DBA and POEMS data management console are scheduled to ship in March. Pricing is agent-based and starts at \$1,200 for users in the PC and Unix market.

©Platinum: (708) 620-5000.



Platinum's Filipowski said to look for the repository this month.

## BusinessBriefs

**Sybase, Inc.** and **PeerLogic, Inc.** have announced plans to integrate their message-oriented middleware technology. The companies will ship an interface for Sybase's Enterprise Messaging Services (EMS) and PeerLogic's Pipes Platform by the second quarter of 1996. The links will enable users to take advantage of the dynamic name service of Pipes, which allows application components to find each other on a network, as well as EMS' queuing capabilities, officials from the companies said.

Computer-aided software engineering tool maker **Bachman Information Systems, Inc.** of Burlington, Mass., and Providence, R.I.-based **Cadre Technologies, Inc.**, a maker of object-oriented analysis and design tools, have agreed to merge. Bachman will issue \$30 million worth of its stock for all outstanding shares of Cadre stock. The firms hope to finalize the deal by March. The new company will develop modeling, database design, and development and component software.

## SHARED LOGIC

## Do you really need a data warehouse?

**D**ata warehousing is a technology that evolved primarily in response to end users who, despite all their advanced computer systems, still could not get the business information they needed in a timely manner and a presentable format.

Looked at from this admittedly simplistic point of view, data warehousing is just a redesigned database with a better graphical user interface. If this is true, then it prompts the question, why not just design it right the first time?

Building a warehouse itself can be extremely complex, which has created a niche market for data propagators, pumps, replicators and other buzzwords still to be coined.

Then once we have a new copy of this data, we need special tools to slice and dice it into millions of bite-size pieces. Thus was born multidimensional analysis. Last time I checked, we used to call them reports.

Lastly, now that all this clean and orderly data is sitting in the warehouse, we can really start to have fun by going after it with on-line analytical processing (OLAP) tools. (This used to be called forecasting.)

The cynic would assume that data warehousing is nothing more than a marketing ploy to try and sell more high-end computers, database management systems, query tools and replicators. But, all sarcasm aside, data warehousing is actually an appropriate response to a true need in the marketplace. The key is to discover whether you actually need a data warehouse.

I've identified four environments that should seriously be considered candidates for data warehouses: Dirty Data, Heavy Analysis, Real Time and Massive Data.

The Dirty Data site typically will have data stored in multiple formats. In this kind of environment, the data often is filled with inaccuracies because of the lack of communication between the disparate systems. The data warehouse can serve as the central data store that integrates the disparate databases and even scrubs the data before adding it to the warehouse.

The Heavy Analysis site uses data to analyze trends and forecast events. OLAP systems for forecasting and data analysis often require that the data be aggregated or orga-

nized into specific formats. Data warehouses fulfill this requirement.

A Real Time site will require serious number crunching — often 24 hours a day — for activities such as trading, oil exploration or high-resolution graphics. A data warehouse can provide a way to optimize these processes without compromising the performance of the operational systems that perform the transaction processing and data collection.

A Massive Data site is one in which the sheer volume of data cannot possibly be managed or used effectively without a centrally managed warehouse.

For example, a worldwide telecommunications company with hundreds of thousands of customers and millions of devices to maintain will have hundreds of disparate systems. Data warehousing is the logical solution for creating useful views and getting the big picture.

While data warehousing firms could be criticized for marketing a technology that is nothing more than a glorified fix for poor enterprise data modeling, the fact is that the need for data warehouses is real. Until we build a single machine with a single database that can handle unlimited users and data, data warehouses will be viable.

Myers is president of Client/Server Connection, Ltd., a Cambridge, Mass., firm specializing in client/server software solutions. He can be reached at (800) 622-1108, Ext. 522, or via CompuServe at 71332,1726.



Marc Myers



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## EDITORIAL INSIGHTS

### Don't let statistics fool you

A few winters ago, a dozen investigators independently reported figures on antihistamine pills. Each showed that a considerable percentage of colds cleared up after treatment. A great fuss ensued, and a medical product boom was on. It was based on an eternally springing hope and a curious refusal to look past the statistics to a fact that has been known for a long time. . . proper treatment will cure a cold in seven days, but left to itself, a cold will hang on for a week.

— From *How to Lie with Statistics*

Like the antihistamine studies, research on the Internet market is helping spark a boom in electronic commerce. But basing your on-line strategy on such research is fraught with peril. Competing studies offer widely varying estimates of the number of Internet users as well as their demographics.

Getting a grip on this amorphous on-line user base is tough, as is evidenced by even the most impressive research. For example, the recent Commercenet/Nielsen Internet Demographic Survey — which pegged the number of Internet users at about 24 million — may be deeply flawed and the results vastly overstated, so claimed a research expert last week

who helped design the study.

A more pressing concern is that this research aims to map the contours of the overall on-line market and, in all likelihood, you don't need a mass-market electronic commerce strategy. You need focused research that shows whether your target audience is on-line. And you'll have to do that research yourself.

Once you've decided whom you're trying to reach — customers, suppliers, influencers in the press or analyst community . . . whomever — you need to learn whether they have direct or modem access to the Internet and what kind of services they want from you on-line. What will make their lives easier? Do they need to order products or just find out where your resellers are? Do they want to download product specs, file RFQs or leave mail for employees? Knowing all of that will help you design a site that works and gets used regularly.

Look, you don't need some giant study to tell you there's an Internet world out there. But you better be budgeting for research that shows whether your little piece of the world is wired for business.

John Gallant, editor in chief

jgallant@world.std.com

## Taligent's passing signals the beginning of a new era built on existing foundations

IBM's decision to pull the plug on Taligent, Inc. as an independent company confirms a shift to a new business model for software products. This new model emphasizes incremental innovation with technology and rejects the assumption that customers will make sweeping changes to their technology infrastructures with high up-front risks and costs.

The implications of this shift are just coming into focus. It seems apparent, though, that network managers and users in the new era will be participants in the creation of new technology — whether they want to be or not.

Taligent promised to solve a broad array of problems with object-oriented programming, component frameworks, a distributed object infrastructure and an innovative new user interface designed for networks. In the end, however, Taligent was too sweeping, too grand — in every respect.

Taligent's technology included a new operating system platform, a development environment and a user environment. Taligent hired hundreds of developers and marketers and hosted high-tech demonstrations at key venues. Unfortunately, the company demanded too much of the customer.

Taligent will now be absorbed by IBM, where I doubt it will have much of a future. Big Blue already has many competing investments in distributed computing and object-oriented technologies. Furthermore, IBM has never seemed to know what to do with the bright ideas coming out of Taligent.

Taligent's passing signals the end of an era in which companies introduced sweeping new environments designed to replace obviously inferior products. But while Taligent was a leading proponent of this approach to product development, it is not the only recent example. IBM managed OS/2 according to this model for a long time. And when General Magic, Inc. sought to design a complete environment for intelligent distributed applications, it found no existing technology worthy of the challenge — everything had to be new. In retrospect, it's clear the ending we have now reached has been coming for a long time.

We've now entered a new age: an era of opportunistic technology. This era features companies that make incremental use of new technology within existing structures. They view existing technology as bases upon which to innovate, and they recognize user preferences to adopt new technologies in stages.

Netscape Communications Corp. exemplifies the thinking of this new era. Netscape's products are based on protocols and services layered on top of the Internet by a loose-knit collection of developers. Netscape constantly improves this foundation work and builds on top of it. New products appear every six months or less. Product strategies change even more frequently.



John R. Rymer

Users are driving the industry into the era of opportunistic technology. Radical change of technology infrastructure is impractical and too risky. Technology coexistence is the rule of the day. However, the new era has its downside, which we are all just beginning to understand.

The most troublesome aspect of opportunistic technology is dubious software quality. Netscape, like

Microsoft Corp. before it, creates new software quickly, tests it to a point and then lets customers finish the testing. The economics of the new era demand this approach.

The current environment — the range of users and technologies — is so complex it defies comprehensive analysis. There's no time for painstaking consideration of a given product's implications for a range of current customers and systems.

There's no way to create a bulletproof, comprehensive environment. Vendors discover the implications of their new technologies during beta tests

involving hundreds of thousands of sites and during the first product release cycle. Only in actual use can vendors see the real problems and the appropriate responses. And so we have episodes such as Netscape's recent product release that contained unanticipated security holes.

It is naive to condemn the approach taken by Netscape and other leaders of the opportunistic era. These vendors are responding to a complicated, unforgiving environment.

Users have helped create this environment and bear responsibility for its consequences, as well. Smart users will adjust their expectations and their practices to cope with the realities of the new era.

First, start by recognizing that, increasingly, IS groups, network and system administrators, and users will be de facto members of the quality assurance team for new technologies. Are you equipped to play this role?

Second, recognize that the gap between product costs and costs of ownership will continue to widen. Existing workers will end up doing double duty without the skills and resources they require to fill vendor gaps in reliability and functionality, manage the integration of multiple products and oversee the operations of new technologies.

Lastly, recognize that new technology often starts in a low-risk tactical mode but quickly becomes strategic. Anticipate this fact of life and plan to deal with it. Otherwise, chaos will reign.

This is the significance of Taligent's passing — if we choose to recognize it. The business model for the software we buy and use has changed. We can either be victimized by this change or take positive steps to seize the opportunity it presents to us.

Rymer is editor in chief of the "Distributed Computing Monitor," a monthly report published by Patricia Seybold Group, Inc. of Boston. He can be reached at jrymer@psgroup.com.

*It seems apparent that network managers and users in the new era will be participants in the creation of new technology — whether they want to or not.*

## Teletoons

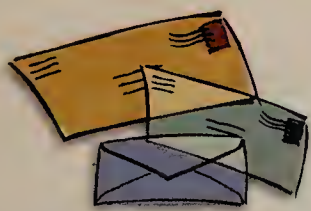
By Phil Frank and Joe Troise  
guru@well.com

### The Future of Networking JUNE 1996

IBM, in an attempt to mimic AT&T, breaks up into hundreds of smaller companies.







## IN-BOX

### Fusion feedback

Thanks for Fusion. You guys going on-line has been fantastic. I use it to do research for my clients and review articles I may have missed on a particular subject.

I also appreciate that you do not use many graphics on-line. Access is a lot quicker.

Keep up the good work.

*Del Chandler*

*Principal*

*Chandler Associates*

*Danville, Calif.*

Your on-line version of *Network World* is fabulous. The articles are timely and informative, and your design is stellar. The hyperlinks and story links are a great idea.

Well done!

*Tom Shaheen*

*Computer systems consultant*

*University of Michigan Business School*

*Ann Arbor*

### First not always best

I agree completely with Scott Bradner's assessment of ATM (Nov. 27, page 22). All too often, users spend too much money implementing a new technology for the sake of "being the first," rather than employing appropriate technology to cost-effectively solve business problems.

*Chuck Clark*

*Director, systems engineering*

*Timeplex Federal Systems, Inc.*

*Fairfax, Va.*

### Parents are responsible

Regarding Mark Gibbs' column on whether there should be control over pornography on the 'Net (Nov. 27, page 41):

I believe censorship is needed for children who do not have the maturity to make adult decisions. This censorship should take the same form that it did when I was young.

My parents raised me in a loving, caring environment. They knew what I was up to because they experienced 90% of it with me and inquired about what I did during the other 10% of the time. (It was not an inquisition; they were genuinely interested.)

It does us no good as parents to abdicate our responsibilities and blame the government, schools or the Internet because they won't assume those responsibilities.

*Jack Swift*

*Manager*

*Swift True Value Hardware, Inc.*

*Houghton, Mich.*

## No shortage of talented Americans

### Equal access needed

David Buerger's recent column on the proposed legislation to limit H-1B visas was flawed (Nov. 6, page 77).

He claims there is a shortage of Americans with advanced technical degrees, which he justifies by saying that foreigners constitute 49% of the Ph.D.s in computer science, up from 36% a decade ago.

The problem is that universities are pumping out too many graduates with advanced degrees. Americans are seeing this when they look to the job market, and so they don't enter graduate programs. The slack is taken up by foreigners employed by universities as cheap labor.

There currently is a glut of well-educated Americans who cannot find decent jobs. This is compounded by the fact that employers are rewarded for hiring minorities, groups which most foreigners fall into.

The current outlook for white males is particularly discouraging. In fact, several organizations, such as the Young Scientists' Network, have been established to help those with advanced degrees find jobs, in their own or other related fields.

I would agree that curtailing immigration is a poor way to solve the problem, but to claim that Americans are undereducated, and therefore missing out on great jobs, is preposterous.

Buerger's Bangalore example only shows that people in other parts of the world can be found for less money, but it ignores issues such as differences in environmental and child labor laws.

Until the playing field can be leveled, tools like stricter immigration policies and taxes will be used to ensure that Americans get equal access to job opportunities.

*Michael Uttormark*

*Group information manager*

*University of Wisconsin*

*Madison*

*The author replies: I did not say there is a shortage of Americans with advanced technical degrees; I said companies that hire advanced technical staff say there is a shortage. These companies go through administrative hoops to legally bring foreigners onboard. They say they would be happy to avoid doing that if an adequate supply of qualified can-*

### Regulation nightmare

How arrogant can we be to decide that we, the U.S., are going to regulate the Internet? Sorry, but isn't the 'Net international?

As a national LAN administrator for one of the larger accounting firms in the U.S.,

I can only begin to imagine the nightmare involved in even attempting to regu-

*lating the Internet. However, it does not.*

*I was addressing an issue that affects relatively few jobs. But those few jobs are critical for this sector. I was not saying that Americans are undereducated.*

*As far as your comments about my example, borders are irrelevant now that we have the Internet. It doesn't matter where you live. What matters is what you can do and what you charge to do it. The Internet is the great leveler, and it is here to stay. It's a fact of life, and professional workers had better accept it.*

### The real concerns

David Buerger's column demonstrated his sensitivity to the U.S. electronics industry but failed to take notice of the real concerns and declining status of electrical/electronics engineers.

There have been documented reports of numerous small to midsize electronics companies and software houses in the U.S. that exclusively hire Indian engineers and programmers because they will work for a fraction of the pay and benefits that an equally talented U.S. citizen will accept.

To suggest that "some slots can be filled by only a handful of people in the world" is true. There are rare times when only an Einstein will do. But suggesting that a handful does not include a number of U.S. citizens who could fill such positions if offered competitive compensation is ridiculous. Buerger has talked to industry giants who point out that only between 1% and 5% of their U.S. workforce is here on visa.

He fails to recognize that the positions filled by these people are not low-level slots, but the technical placements coveted by American engineers and programmers who, after 15 or so years in the industry, are not well suited for entry-level posts.

Make no mistake about it: There are a sufficient number of talented U.S. engineers and programmers, both graduated and in the pipeline, to satisfy the current and future needs of American industry.

Those who say that this is not the case have a vested interest in promoting the contrary view.

*Ellery Potash*

*Vice president, engineering*

*Intra Computer, Inc.*

*New York*

late the Internet.

Basically, the technology is not there. Too many sites are coming up too fast to be truly regulated, and even if people try, they will always be at least three steps behind.

All I have to say to someone who doesn't like pornography is, "Don't look at it!" Most explicit areas on the Internet are fairly well marked and are easy to avoid if you stumble upon them.

*Jeff Harvey*

*Grand Rapids, Mich.*

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and Doing Business On-Line

## Briefs

■ **Boston-based consultancy The Yankee Group** is predicting an **Internet shakeout**, with the 1,400 Internet service providers in operation today whittled down to about 20 by the year 2000. Smaller Internet service providers will fall victim to increased competition and fail due to the lack of capital or technical expertise. Yankee Group Director Howard Anderson also noted that MIS directors, under pressure from corporate management to put up a Web site, are spending from \$50,000 to \$125,000 for their Web adventures, with few concrete benefits to show for it.

■ **CompuServe, Inc.** has released **Spry Safety Web Server** for Windows NT and Unix platforms. The package supports Secure Sockets Layer transactions and includes the ArchiText Excite search engine, SoftQuad, Inc.'s HotMetal Pro HTML authoring tool and Spry's Internet Office. The software costs \$700 until Jan. 15 and \$1,295 thereafter.

CompuServe: (206) 957-8000.

■ **Cupertino, Calif.-based NetManage, Inc.** is joining the crowd and posting a free downloadable license of its new **HTML 3.0 WebSurfer browser** in both 16- and 32-bit formats. NetScape Communications Corp. and, recently, Microsoft Corp. opted to distribute their browsers free of charge on-line. NetManage's WebSurfer is available from the company's home page at <http://www.netmanage.com>.

NetManage: (408) 973-7171.

■ **The electronic storefront WebTrader 2.0** from **SBT Internet Systems** of San Rafael, Calif., now integrates fully with **Checkfree Corp.'s** Electronic Payment Processing service, providing secure authentication of credit card transactions.

SBT: (415) 444-9900; Checkfree: (614) 825-3000.

## Copyright Center begins new chapter on the Web

*Secured server records use of copyrighted materials.*

**By Ellen Messmer**  
New York

The Copyright Clearance Center, Inc., which collects copyright fees on published works, once tracked usage exclusively through reports the firm received by mail.

But now there's the Web. Last July, the Copyright Clearance Center put its 170,000 titles up on a World-Wide Web server. Now, corporations and schools

can do a field-oriented database search to identify specific works and report usage via an HTML browser under their organization's billing number.

As of last month, "12% of our business is coming through this medium," said Woody Johnson, Copyright Clearance Center IS executive.

By letting their customers report usage of copyrighted material, such as by photocopying, to its secured Web server, Copyright Clearance Center clerks no longer have to sort through mail and key in that reporting data.

"The traditional way we did it called for organizations to get our catalogs and report via the mail," Johnson said. "We had to key in the data from reports they mailed to us. Now, they can

search the Web for our titles and fees."

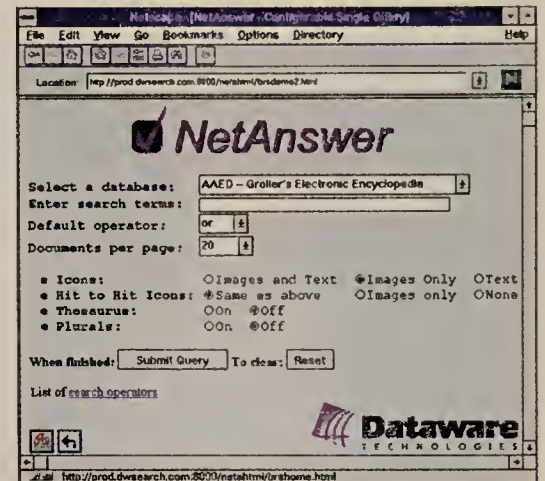
Reporting data is being sent in encrypted form to keep it confidential over the Internet, Johnson noted.

The Copyright Clearance Center is serving up its published titles via Dataware Technologies, Inc.'s NetAnswer, a search-and-retrieval database running on top of Netscape Communications Corp.'s CommerceServer.

NetAnswer uses the same Dataware BRS/Search technology common to Dataware's CD-ROM search tools.

NetAnswer has a filter that allows Web publishers to download documents from about 50 formats into the BRS/Search database on a real-time basis, according to Bill Phelan, Dataware's director of Internet products.

NetAnswer presents the Web user with a query interface written in HTML and passes the



NetAnswer passes queries to a text retrieval database.

user's query to the NetAnswer text retrieval database.

NetAnswer can be configured to profile each user's access to certain documents.

Similarly, output can be defined so specific users receive different advertising or reference data when they are on-line.

Dataware is also getting into the Web outsourcing business, volunteering to manage customers' Web publishing ventures through its NetAnswer Hosting Services. ■

## BUSINESS SPACE

### A devilish letter to Bill Gates

**D**ear Bill, Oh, Bill, Bill, Bill. Now what have you gone and done? There was the Internet market all seething with competitiveness, people full of lust for loot, and folks ready to sell their souls left, right and center. Then you had to go and throw a spanner in the virtual works.

I thought we had a deal, Bill. And your payoff was that you would get to own the PC market.

I thought it was going to be such a great way to stimulate covetousness, gluttony and the rest of the Big Seven that I would get a huge payoff in sinners. (Actually, I never expected to see "coveting thy neighbor's ox" as one of the big sins of the PC revolution, but the blockbuster release of that SimOx game proves that it is. Well, there you go, you guys up there are a surprise a minute.)

My problem with your Internet announcements on Dec. 7 is that it appears you're aiming for even more market dominance! At the rate you're going, you'll have a slice of just about every aspect of business.

Let's look at your Internet announce-

ments. First, your timing: You've waited to see how the early players' markets developed and then focused on exactly what would let you take the markets over. Fiendish.

And what's with this "we're supporting Java and Visual Basic Script and Oracle's OCXs" stuff? Jeez, Bill, is nothing sacred?

Actually, I've got to say that throwing VB into the equation is pretty creative. After all, the idea of making it possible to use such a well-understood programming system as a component of Web presentations is — well, what can I say — devilishly clever.

But the deal where CompuServe uses your browser is positively evil. You wind up defusing Netscape's hegemony by sheer marketing muscle. You sure have nailed Net-

scape. There they were sitting fat and happy, with their shares at a ridiculous level, and your announcement goes and knocks 50 points off the price!

If you'd just left that one alone, the amounts of money involved might have led to some very creative sinning.

But there's the question of all of the companies that are supporting the Microsoft



Mark Gibbs

strategy. How did you get them to come in with you? I got all of their souls a long time ago, so what the heaven did you offer them?

So Bill, correct me if I'm wrong, but you're trying to take over! I am now convinced that you are aiming to own the souls of everyone on earth (or at least a portion of each one that uses a PC, which is a pretty damned significant number).

Bill, I'm pretty certain that this violates the contract we had. You said you only wanted the PC business, and because of our deal, you'd give me access to your mailing lists and explain how you manage to make people think that they should pay so much for software that bombs so frequently.

The problem is that while you gave me the lists, you kept making excuses about having meetings with your accountant and never explained the trick of that software thing. Worse still, it now looks like you're moving in on my business!

So Bill, my lawyers will be calling yours, and, if necessary, I'll take this all the way to our Supreme Court — that is, if He's not too busy — his schedule is hell (in a manner of speaking) these days.

I want our whole deal nullified, and I want my soul back. You can keep the PC business.

Yours admiringly,  
D. Evil

Gibbs will probably rot in hell. What do you think of the MS announcements? Let him know at [mgibbs@gibbs.com](mailto:mgibbs@gibbs.com) or call (800) 622-1108. Ext. 504.



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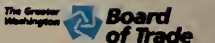
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# Technology Update

Keeping Up with Network Technologies and Standards

## NETWORK HELP DESK

Network World tracks down answers to your questions. Please submit them to Dana Thorat via phone at (800) 622-1108, via the Internet at [djt@world.std.com](mailto:djt@world.std.com) or via fax at (508) 820-1103.

**Why does DOS 6.2 and Novell, Inc. NetWare 3.12, which are installed on our Compaq Computer Corp. Deskpro 590 PCI, only see 16M bytes of physical memory in the server when it really has 48M bytes?**

Via the Internet.

You may have a minor problem with the system BIOS or the motherboard, says Ron Nutter, a Master Certified Novell Engineer in Lexington, Ky.

First, purchase a RomPAQ — Compaq's term for a flash memory update — for the BIOS chip on the server's motherboard. RomPAQ allows you to update the BIOS contained in the flash memory chip.

If the RomPAQ doesn't resolve the problem, then you will also have to manually register the memory for NetWare to see it. To do this, add the line SET AUTO REGISTER MEMORY ABOVE 16 MEGABYTES = OFF in the startup.ncf file on the server and comment out the lines for loading hard-disk controller drivers.

Next, place a copy of the servers' autoexec.ncf file onto the DOS boot partition in the directory where server.exe resides. Insert the command, REGISTER MEMORY 1000000 2000000 in the autoexec.ncf file following the section that sets the IPX internal network number. After this line, enter the statement that will load the hard-disk controller driver. Next, insert the line MOUNT ALL.

Reboot the server and all should be well. In addition, you should rename the autoexec.ncf file found in SYS:SYSTEM to avoid confusion when troubleshooting problems that can be resolved by making changes to this file.

**More NetWare partitioning advice**  
Nutter has come up with another way to increase the size of an existing NetWare 4.1 partition, which was the subject of a question in the Nov. 20 Network Help Desk.

Add another drive on the server and create a NetWare partition on that drive. Then span the volume that needs enlarging to the NetWare partition on the new drive.

## Fibre Channel can satiate bandwidth hogs

By Doug Anderson

Most enterprises have applications such as client/server computing and digital imaging that take every ounce of network capacity and then clamor for more.

Many network managers satisfy these bandwidth-hungry hogs by moving them to their own backbone network. But unless the backbone uses a true, high-performance technology, this strategy may not accomplish much.

One way to feed these applications is via Fibre Channel, an ANSI standard that delivers a lot of scalable bandwidth and readily fits into an enterprise network.

The Fibre Channel standard is supported by the Fibre Channel Association, a group of more than 80 organizations, including industry heavyweights Hewlett-Packard Co., IBM and Sun Microsystems, Inc. Fibre Channel products, primarily adapters, hubs and switches, are available from a variety of vendors.

Available products support speeds from 266M bit/sec to 1.062G bit/sec full-duplex. Future wares will handle transmissions at 2G and 4G bit/sec, per ANSI specifications. What's more, Fibre Channel can be used with either fiber or coaxial cable.

The Fibre Channel standard provides for variable-length frames that support relatively large payloads with minimal overhead. They can be as much as 2,112 bytes with only 36 bytes of overhead, which translates to less than 3% on an optimal frame. This architecture provides end-to-end, sustainable throughput of 25M and 100M bytes/sec for 266M and 1.062G bit/sec products, respectively.

### Is it a channel or a network?

Some call the Fibre Channel interface a channel-network hybrid. It combines desirable network features, such as connectivity, distance and protocol multiplexing, with channel features, such as simplicity, performance and guaranteed delivery.

Fibre Channel can provide bandwidth for either shared-media or switched topologies. An "arbitrated loop" connects a

series of stations in a ring topology, allowing all stations to compete for a fixed supply of bandwidth. A "fabric," on the other hand, delivers scalable bandwidth by using crosspoint switch technology to provide each connection with the full rated capacity of the circuit.

By adding stations to a Fibre Channel switch, you can increase the aggregate capacity of the network rather than intensifying the

It does not rely on higher layer protocols to detect and correct transmission errors.

### Applying Fibre Channel

Even though gigabit-per-second bandwidth is typically not required throughout an enterprise network, many organizations can find places where Fibre Channel's capacity can be used to support intense, delay-sensitive traffic. Using Fibre Channel

ing its performance.

Increased use of images on enterprise networks also is driving the need for bandwidth. Videoconferencing, for example, can be frustrating on bandwidth-limited networks.

National Television Standard Code quality in a 640 by 480 pixel window requires 30 frames/sec and a minimum of 16 bits of color — or more than 147M bits/sec of end-to-end through-

## HOW IT WORKS

### Fibre Channel flow

ANSI's Fibre Channel standard handles transmission of various protocols over fiber or coaxial links operating at speeds from 266M to 4G bit/sec full-duplex for each available network path.

2

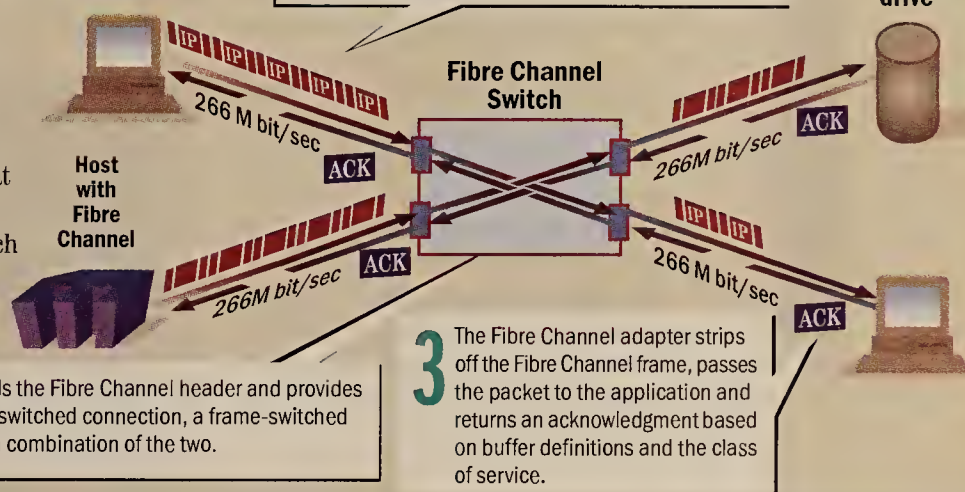
The switch reads the Fibre Channel header and provides either a circuit-switched connection, a frame-switched connection or a combination of the two.

1

The Fibre Channel adapter wraps outgoing data, such as Internet Protocol packets, in a frame that provides the address for the switch port connected to the intended destination.

3

The Fibre Channel adapter strips off the Fibre Channel frame, passes the packet to the application and returns an acknowledgment based on buffer definitions and the class of service.



competition for a fixed supply of bandwidth. This gives you the ability to turn small networks with relatively limited capacity into larger networks with substantially more bandwidth — potentially terabits per second — without sacrificing the original investment.

Interoperability comes from a layered structure designed to accommodate just about any communications technology, whether it be voice, video or data applications. Fibre Channel provides a way to map from the highest layers of the standard to the lower layers. This means it can support network protocols such as Asynchronous Transfer Mode, Internet Protocol and Novell, Inc.'s IPX, and channel protocols such as SCSI.

The standard also addresses difficult networking issues, such as how to control congestion. It provides for a credit-based flow control mechanism and acknowledgment protocol to guarantee all data sent by the originator is received by the responder.

as a spot technology can help enhance LAN performance while preserving the investment in existing technologies.

Backbone networks that connect file servers are an excellent example. Today's standard-issue file servers are capable of many times the I/O of their predecessors, and enterprise networks support a greater number of these powerful servers. Even the strategy of putting these servers on their own LAN segments will pay only limited dividends if those segments don't have the capacity to keep up with the huge increase in traffic flow between servers.

Fibre Channel fits well into this environment by providing gigabit-per-second bandwidth and support for common server platforms, including Microsoft Corp.'s Windows NT, Novell's NetWare, and Unix. Routers with Fibre Channel interfaces can be used to connect the backbone and LANs, letting you preserve the investment in your existing network while improv-

put. Fibre Channel sustains this kind of throughput while supporting isochronous video, voice and data concurrently over a single network.

Image data also is being used in many other applications. Industries such as medicine, entertainment and financial services store an increasing amount of image data to allow more effective retrieval and manipulation.

In these cases, the problem is not maintaining a frame rate, but simply moving the data at a rate that provides a reasonable response time.

In short, Fibre Channel provides the unparalleled bandwidth needed to address the intense requirements of today and the future.

*Anderson is a product manager at Ancor Communications, Inc., a manufacturer of Fibre Channel switches and adapters in Minnetonka, Minn. He can be reached at (612) 932-4069 or via the Internet at [douga@ancor.com](mailto:douga@ancor.com).*



# WEB SITES

## The good, the bad and the complete



**T**o say that the World-Wide Web is a growth industry is an understatement.

At last reckoning, there were at least 30,000 Web servers on the Internet, and the expansion of new sites is so rapid that no one has a good grasp of the Web's real growth rate. But while the Web's popularity and growth are impressive, the business effectiveness of most sites ranges from poor to wretched.

What is it that makes the few good business sites so good, the bad so awful and the rest just so boring? The answer lies in the mix of strategic focus, organization of information and quality of design.

With the right mix, a company can establish a defensible stronghold in new marketing territory. But poor design and the wrong approach will throttle the vitality of your company's electronic commerce efforts and defeat your marketing efforts.

### Effectiveness at the heart

While information superhighway hype abounds these days, the reality is that the Internet is still mostly a testing ground for electronic marketing and, particularly, sales. Most companies are establishing Web presences to "stick a toe in the water" — to see what's there and begin positioning themselves for what many see as the inevitable commercial and consumer rush to the Internet.

**This Harley-Davidson dealer has nailed the art of using a logo on a transparent background.**



It's not surprising, then, that the art and science of building an effective Web site are new; Web construction is a young discipline that has years of evolution ahead.

The basic infrastructure of a Web site isn't hard to acquire and install. All you really need is a permanent connection to the Internet and a computer running

Web server software.

But atop the infrastructure are the actual documents that define the content of the site, and it's there that the problems of creating a successful business site lie.

A business site should be designed to draw people in: get them to see what you have to say or sell, make a positive decision based on the material — such as choosing to buy from you — and get them to come back.

If you fail in any of these objectives, your Web site is not living up to its potential as a business tool.

### To Netscape or not

Web documents are written in HTML, a simple system with a formatting method, called tags, to identify the structure and contents of a document.

It's this simplicity that gives HTML its power and limitations. The power of HTML is that it's easy to learn, making it relatively easy to create and edit documents. The limitations lie in the narrow range of things that can be done with document contents under the most common version of HTML.

HTML Version 2 is the level implemented by most browsers — the software Web surfers use to view your documents. Version 2 is focused on the intent of document components rather than how they're displayed or rendered.

Version 2, for example, determines that a certain piece of text is intended to be displayed in an address style. Exactly what that means is left to the configuration of the browser (most browsers show addresses in italics). But if you want to take a different route — displaying the address in 12-point red Helvetica type with a marbled background, for instance — you're out of luck.

## The ins and outs of constructing a Web page

**I**f you're thinking of constructing a Web site or you want to improve the site you've already built, there are some simple rules to follow.

First, decide why you are going to the Web. If you're setting up for sales, make marketing and selling your design focus. Don't overwhelm the customer with reams of dry company backgrounders. If you are going to educate visitors, then offer something interesting and new. Don't lose sight of your strategic objectives.

Second, make certain that your content works. Ensure that images and text are of suitable size and read well, that ISMAPs are obvious in their functionality and that the text is suitable and spell-checked.

Third, promote your Web site. You need to go to all the Web indexing systems, such as Yahoo and Lycos, and register. You should place announcements in all relevant newsgroups and include your Web site location in your traditional and on-line marketing collateral.

Finally, make sure your site has sizzle and value. Keep to an update schedule and ensure what you do is relevant to your marketplace. The Web is already a competitive environment and will only become more so.

By Mark Gibbs



By Mark Gibbs

# waste of bandwidth

The Netscape browser from Netscape Communications Corp. offers some escape from these constraints. It supports not only components of Version 3 (the next proposed HTML release), such as the ability to display tables, define backgrounds and control fonts, but it also provides exotic features, such as dynamic updating of data on servers and clients as well as embedded objects in documents.

Netscape browsers are the dominant force in the market today. Web site operators report that as many as 80% of document retrievals are from Netscape clients and many sites have been designed specifically for them.

Here's the rub: When another browser is used to access such a site, content based on Netscape-specific support effectively will be unreadable. Companies designing Web pages have to decide whether to support Netscape browsers specifically or aim for the broader, but not much larger, market.

If you don't use the Netscape-specific markup, you can address the widest possible market. But your ability to control the message you

send to your audience will be severely limited. You won't have tables, font and type-size control, or other key tools that allow you to show exactly what you want and how you want it — a central problem in creating an effective marketing vehicle.

If you should choose to go Netscape-specific, you won't be alone. Some of the most sophisticated sites on the Internet are doing so. Check out the Independent Underground Music Archives and HotWired sites for superb use of Netscape features to build effective content. (See page 38 for a list of URLs belonging to sites mentioned in this story.)

## See no evil

One crucial component of Web documents is in-line graphics. These make documents more compelling than plain text but at the cost of more download time for the end user.

In-line images can be either GIF or JPEG format files, and there are trade-offs depending on which you choose. GIFs tend to have larger file sizes and a maximum of 256 colors, while JPEG files have much better compression and can specify up to 64,500 colors.

While JPEGs would seem to be the better choice, only GIFs support transparent backgrounds.

This allows the background to show through the image where a chosen color has been defined as transparent, making images look like they are part of the page rather than just stuck on it. (See the Harley-Davidson of Stamford, Conn., site for a very aggressive and effective use of a logo with a transparent background.)

Does your company have rigid standards on how corporate logos should be laid out and what colors should be used? Get ready for a battle.

Color rendition is hardly perfect, but problems there can be sidestepped by encoding colors so they are displayed nearly correctly.

A bigger problem may be resolution. Most corporate style guides are de-

signed with print media in mind, calling for resolutions of 600 dots per inch (DPI) or better. But a logo with lots of fine lines that looks great in the trade press can look like a smudge or late-night TV static on-line, considering that the resolution of a computer screen is around 76 DPI.

Getting color and resolution right requires that designers understand the limitations of on-line rendering and design accordingly.

## Size is everything

There are many sites on the Internet where it's clear that designers haven't considered the implications of downloading huge in-line graphics or where they just don't care. Among these are Metaverse (the site of former MTV veejay Adam Curry's On Ramp, Inc.) and a number of government sites, such as the one run by the Department of the Treasury.

Some others, such as Megadeth Arizona (a site for fans of the rock group Megadeth) and Silicon Graphics, Inc.'s site, ignore the implications of huge graphics because the graphics are central to organizational image — they are strategic marketing tools.

But even where graphics are sized correctly, there may still be problems. It's common for graphics to look muddy or for colors to appear wrong. Most of these problems can be cured by judicious editing of the image color palette and red/green/blue balance.

## Maps that mustn't miss

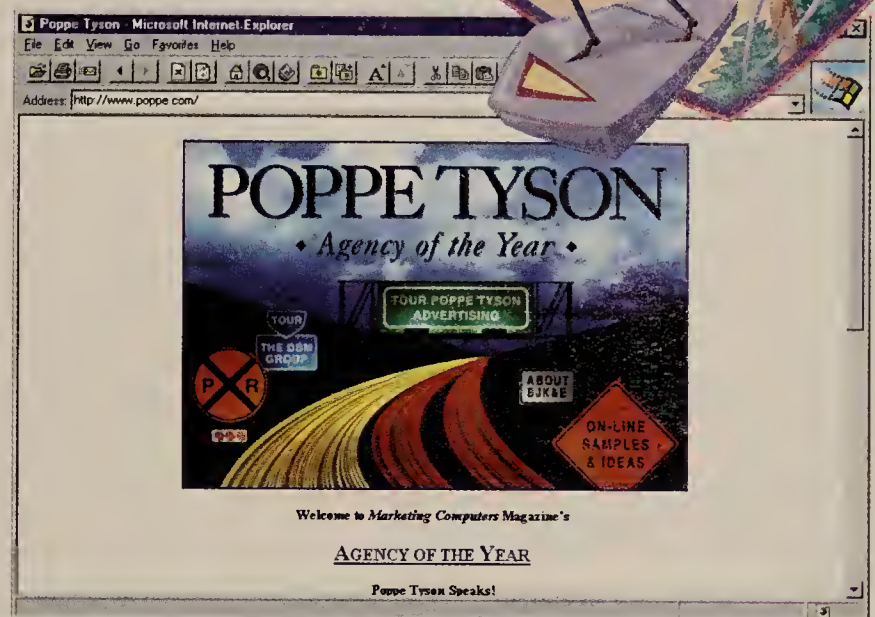
But perhaps the greatest sin in use of in-line graphics is the misuse of maps with hot spots — dubbed ISMAPs. When in-line images are included with the ISMAP attribute, they become coordinate-mapped. Clicking on your mouse button when the mouse pointer is inside the boundary of the image will result in the server being sent the x and y coordinates of the click.

The server will return a different document depending on which hot area was clicked within the image boundary.

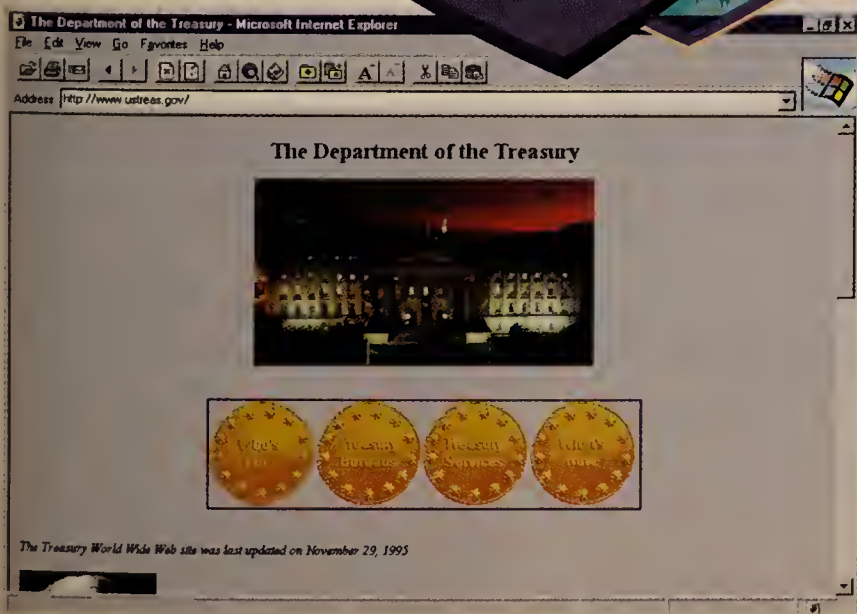
But when the hot areas of the image aren't obvious,

*Continued on page 38*

This advertising agency uses ISMAPs well, making it clear where you need to click to get what you want.



Don't hold your breath while downloading large graphics or images like this one.







For links to the sites mentioned in this story and primers on building your own site, connect to <http://www.nwfusion.com>. Select NetRef, Technology Resources then Internet/Web.

Continued from page 37

the user isn't aware of the relationship between the image and the functions it offers. For example, if unbordered text within an image is used as a link, it isn't at all clear to a user where a mouse click will be effective. The image takes you to places you don't expect to go or doesn't respond when you expect, muddling the message.

Examples of excellent ISMAP image usage to enhance the accessibility of a

Web site can be found on Apple Computer, Inc.'s site and at the home page of the advertising agency Poppe Tyson, Inc.

#### Speak no evil

Beyond these design basics, the actual content and layout of documents in a Web site is central to its business value. Sites where text is poorly edited, misspelled or simply uninteresting are rife, as are sites where the content is out-of-date or simply

not updated often enough.

You have to be committed to updating information as it ages. For example, the Virtual Vegas site, until recently, was months out-of-date, making it appear as if the organization's marketing plan had been abandoned. That's an extreme example, and the group has gotten back on track, but there are many other sites where you'll find news items and data that is well past its "show-by" date.

It should be part of your marketing plan to put all press releases and new product data on your Web site and regularly remove old data or shift it to an archive section.

Godiva, the famous chocolatier, doesn't stick with just one approach, and it keeps the site current. The company has special offers and page designs for each holiday. For example, at Easter, the site offered a number of promotions and took on a holiday motif that included egg symbols for bullet lists.

Most importantly, Godiva allows you to purchase on-line. The company makes it easy to buy its products and directs you according to holidays and events. Godiva has started to carve out marketing territory that rivals will find hard to invade.

#### Compounding problems

Other problems occur where a company's Web pages have graphics that are pointless or distracting, where the layout of pages is unappealing or confusing, and navigation around the site is awkward. These shortcomings give customers reasons to leave, which is not exactly why you went to all the trouble of putting up a site.

A more subtle content fault is the direct result of misguided thinking about the purpose of a corporate Web site. Some pundits have been promoting the idea that Web sites, specifically, and Internet sites, in general, should be information-heavy.

See Web sites, page 41

## SITE INDEXING

**Apple** <http://www.apple.com>

**EDS** <http://www.eds.com>

**Godiva** <http://www.godiva.com>

**Harley-Davidson of Stamford** <http://www.hd-stamford.com>

**HotWired** <http://www.hotwired.com>

**IUMA** <http://www.iuma.com>

**Megadeth Arizona**  
<http://caprec.com/Megadeth/megadeth.html>

**Metaverse** <http://www.metaverse.com>

**Poppe Tyson** <http://www.poppe.com>

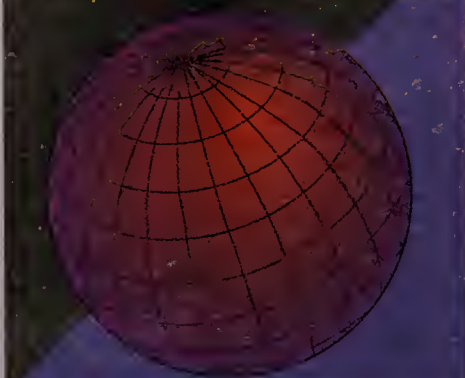
**Renco Encoders** <http://www.silcom.com/renco>

**Silicon Graphics** <http://www.sgi.com>

**Treasury Dept.** <http://www.ustreas.gov>

**Virtual Vegas** <http://www.vegas.com/vegasc.com/invest/quote.html>

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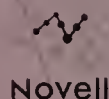
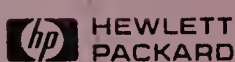
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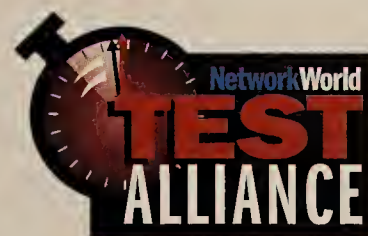
KEAWN0A



# Legalize your

**THESE TWO SOFTWARE METERING APPLICATIONS HELP KEEP SMALLER NETWARE NETWORKS IN COMPLIANCE.**

**By Kristin Marks**



Last week, we looked at state-of-the-art software licensing and metering applications suitable for virtually any need. This week, we're getting more specific, taking a look at two products — Funk Software, Inc.'s AppMeter and Horizons Technology, Inc.'s LANrecord — geared for single-server NetWare environments with server-based applications.

These products lack certain features compared to the higher end packages, including the ability to meter Dynamic Link Libraries (DLL), and they use older stub file technology to implement metering. But they're offered at a somewhat lower price to compensate for their shortcomings.

If your primary goal in implementing metering is to provide some controls for application usage and compliance with concurrent licensing agreements, then, of the two products, pick AppMeter. If your goal is to monitor application usage and to distribute costs back to users' departments, look at LANrecord. However, beware the fact that LANrecord is a 1.0 product and there are still a few issues Horizons Technology has to work out.

## STUBSTITUTION

**Stub files take the place of the application's original .EXE or .COM file. When a user tries to access an application, the stub file asks the NLM if there is an available license. If there is, it calls the real program.**

required to support its package on a second diskette that ships with the product. It includes Version 3.12h of CLIB.NLM and other assorted patch NLMs.

The first step in metering is to register each application using Supervisor. AppMeter — like the higher end CentaMeter and Express Meter products from Tally Systems Corp. and Express Systems, Inc. that we reviewed last week — will fill in the description field for most applications by reading the header information from the .EXE file. Some applications, however, don't provide this information, leaving you to type in a description. On the same screen, you set group restrictions and decide whether you want to enforce license limits.

AppMeter provides optional virus-checking that the administrator can employ for any metered application. If you enable this feature, AppMeter will verify a checksum each time the application is launched.

To define a suite, you define each individual application first and then collect those definitions in the separate suite menu. One drawback to setting up the license definitions is the lack of a browse

feature for choosing the executable file. You can choose the directory in the tree but not for the actual file to meter.

Because the manual recommends running all configuration and installation features at a system prompt, not from inside Windows, you may need a pencil and paper to make lists of files you want to meter before you start the Supervisor console.

The first time Windows users launch an application that you have told AppMeter to track, they get a pop-up box explaining that the application can't be used unless the AppMeter Windows agent is installed. When users assent to the installation, the agent is automatically added to the LOAD= line of their WIN.INI, saving administrators from having to write a software distribution routine.

Peak and current usage reports are available by application, user and group in real time and for historical data. By default, log files are rolled over to a new file on a daily basis, but you can determine how many days' worth of log files you want to keep in a single file.

AppMeter lets you designate NetWare users as VIP users globally but not for individual applications.

More and more applications employ an .EXE file that acts like a loader file — calling other files such as DLLs to do the real work. If a program meters only file-opens and file-closes, then it can't accurately meter these kinds of applications. AppMeter, unfortunately, falls into this category.

Multiple server support is not available out of the box but comes with Funk's OverSight product, which collects

*Continued on page 40*

## AppMeter

AppMeter uses two components to meter server-based DOS and Windows applications. (The product cannot handle local applications). Enforcer is the NetWare Loadable Module (NLM) that tracks application usage, while Supervisor is the administrator's console software. AppMeter uses a DOS interface similar to NetWare 3.X tools such as SYSCON.

The default installation creates a directory under SYS:SYSTEM for storing the supervisor console and another under SYS:PUBLIC for storing stub files. The installation does not complete all the required steps for you. You need to add a search path to your logon script for the public AppMeter directory and grant trustee rights for the group Everyone so that all users can execute the stub files. AppMeter technology relies heavily on the NetWare 3.X bindery files; although you can run the Enforcer NLM on NetWare 4.X servers, you must use bindery-emulation mode to actually do metering.

Thoughtfully, Funk includes the latest Novell patches

## NetResults

<b>Product</b>	<b>AppMeter 1.2</b>	<b>LANrecord 1.0</b>
<b>Vendor</b>	Funk Software, Inc. (617) 497-6339	Horizons Technology, Inc. (800) 828-3808, (619) 292 8331
<b>Price</b>	\$595 for 250 users; \$1,295 for 1,000 users	\$495 for the first server; \$295 for each additional server
<b>Pros</b>	<ul style="list-style-type: none"> <li>Simple metering with a straightforward DOS interface.</li> <li>Easy setup.</li> <li>Automatic Windows client installation.</li> <li>Virus-checking on application launch.</li> </ul>	<ul style="list-style-type: none"> <li>Automatically assigns 100 extra licenses for permissive metering.</li> <li>Administrator's console password protected.</li> <li>Chargeback groups can be created to reflect cost centers discrete from NOS groups.</li> </ul>
<b>Cons</b>	<ul style="list-style-type: none"> <li>No license optimization features.</li> <li>Meters only server-based applications.</li> <li>Uses stub file technology.</li> </ul>	<ul style="list-style-type: none"> <li>Overly complicated license definition steps.</li> <li>NLM is memory-intensive.</li> <li>100 extra licenses means extra administrative work for shops concerned with staying legal.</li> <li>Uses stub file technology.</li> </ul>



Continued from page 39

the log file data for each AppMeter server so you can generate enterprise reports.



**Figure 1:** This AppMeter screen lets you designate applications to be included in a suite, group restrictions, and log and stub file locations. Notice AppMeter's virus checking of application files.

## LANrecord

LANrecord is part of Horizons Technology's LANexpert family of products. It runs only under NetWare, and lacks support for Universal Naming Conventions and Windows NT. Because this is a Version 1.0 product and brings with it some of the problems inherent with a first version, experienced network managers may want to avoid it. For a first effort, LANrecord is respectable, but it lacks a measure of robustness and sophistication.

LANrecord comprises several modules. The password-protected console module lets administrators set up assistant license managers who can run reports but not change the licensing information. LANrecord is the only product we tested with this feature.

The second module is the database of licensing and application information, stored on the file server.

The server module is the NLM, which manages information passed to it from workstation agents. The server module loads the license database into server memory and tracks grant file, or stub file, requests.

We had some problems load-

ing this NLM after installation. We kept receiving a "not enough memory to load database" message at the console. We checked with technical support, who said they hadn't had this message before but that the database requires about 1M byte of file server memory. Our server had 24M bytes of RAM and no nonessential NLMs loaded, so we were stumped. The manual mentions that there are some conflicts with virus protection NLMs, but we didn't have any of these loaded, either. Horizons Technology's technical support staff was never able to help us resolve the problem.

The default installation copies all components to the server's Public and System directories, and assumes that they are mapped, as is standard, to drive letters such as Z:. You may (and most likely will) assign your drive letters differently.

Although there is a Setup button on the toolbar, we found the configuration process to be clumsy. You have to enter data on four screens to configure a license for each application.

When defining an application to be metered, LANrecord requires you to fill in the Manufacturer field for later use in reports that are sorted by manufacturer. We set up metering of a single shareware application but could not continue without filling in the manufacturer's field. We also configured this license to be one concurrent user but found that LANrecord kindly gave us 101 users because, by default, it grants an additional 100 licenses to whatever you specify. Horizons Technology clearly believes in permissive metering as the standard metering method.

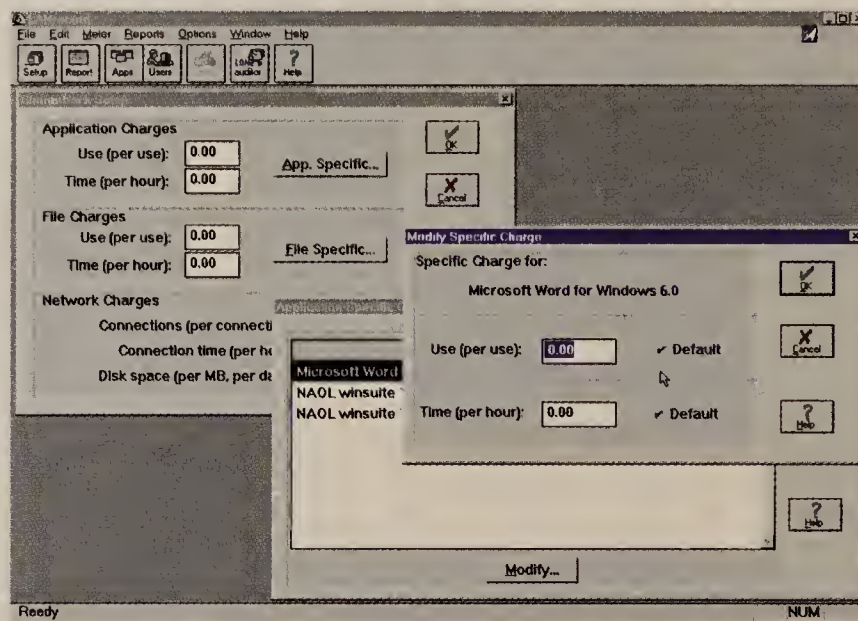
LANrecord takes an unusual approach to metering applica-

tion suites. When a user checks out an application that is a member of a suite, a suite license is used up, even if the user isn't employing any other suite components. When the suite licenses are used up and other users want a copy of the individual application, they get an additional single license.

Every other program we looked at works in the opposite way. Users get an individual license until they access a second application of the suite, at which point the single license is checked in and a suite license is

granted. This makes more sense to us; why reserve a suite of programs before you know whether more than one will be used?

Chargebacks are set up independently of the applications. This allows you to set up the same dollar amount for all applications or different amounts for each application. You can track group costs, but LANrecord doesn't use the groups defined by NetWare to do this. Instead, you can set up site groups (not to be confused with site licenses). You can define site machines by their network card address,



**Figure 2:** LANrecord lets you set up chargebacks for application usage and several other parameters that duplicate the functionality of NetWare 3.X's Accounting feature, including connection time and disk space usage per 24-hour period.

## Metering software features

Feature/Product	AppMeter	LANrecord
<b>Server component</b>	NLM	NLM
<b>Administration console</b>	DOS	Windows
<b>Console password protected</b>	No	Yes
<b>Meters DLLs</b>	No	No
<b>Split permissive/restrictive metering by application</b>	Yes	Yes
<b>Multiple server support</b>	Yes, via optional Oversight product for reporting	No
<b>Suite metering</b>	Yes	Yes
<b>Single/suite license switching</b>	No	Yes
<b>Inactivity tracking</b>	Yes, via NetWare's active connection Watchdog feature for crashed systems	No
<b>Inactivity reminders</b>	No	No
<b>License allocation/reservation by group</b>	Yes	Does not use NOS groups, but you can set up independent site groups.
<b>Queues users requesting unavailable license</b>	No	No
<b>Local application metering</b>	No	No
<b>Time restrictions for application usage</b>	No	No
<b>Built-in application list</b>	No	No
<b>Audits changes to the metering database</b>	No	No
<b>Client support</b>	DOS, Windows 3.X, DOS and Windows apps running under OS/2	DOS in Windows box, or PIF launch only, Windows 3.1
<b>Self-installs for clients</b>	Yes	No
<b>Configuration of single application</b>	Single screen setup with pick lists and browser	Requires visiting 4 different screens

unless they are Macintosh systems, in which case LANrecord displays a "NIC address not available" message. You can also set up department groups that are

## HOW WE DID IT

For each product, we defined single licenses for three server-based Windows applications, then used the same three license definitions as part of a suite. We checked enforcement by logging on to one more workstation than the number we had defined, and evaluated queuing mechanisms and messages. Next, we had one workstation launch a second application of the suite to see if the single license would be swapped out for a suite license.

We also tested local applications with the products that support them.

We checked DOS application metering both from the system prompt before Windows was started and from inside a Windows DOS box. Our Windows workstations ran Windows 3.1, Windows for Workgroups 3.11 and Windows 95.

To test license reclamation, we rebooted workstations running metered applications to see if the metering program would recognize that the license was no longer in use.

To check on each product's ability to handle users, we created a NetWare group and tried to restrict application usage to just the users in it. We also defined a VIP user to make sure important users could access designated applications, even without available licenses.

One test server was a Micronics 33-MHz 486 with 24M bytes of RAM and Thomas-Conrad EISA and Standard Microsystems Corp. ISA LAN boards running NE2000 drivers. The disk controller was an Adaptec 1740. A second server was a 66-MHz 486 clone with 8M bytes of RAM and a 3Com Corp. EtherLink II LAN card. Both servers ran NetWare 3.12.

The test workstations ran on J&L Chatterbox NRS 66-MHz 486 boards with 8M bytes of RAM.

The Windows 95 workstation was a Dell Dimension XPS 466 with 16M bytes of RAM.

## Evaluating a metering product

When evaluating which metering product is right for you, consider the following questions:

- Will it keep you 100% legal?
- Does it work with all your network operating systems, protocols and applications?
- Will the overhead of the management program, server NLMs and increased traffic for license checkout and notifications bog down your file server and network?
- Do the reports help you manage your software licenses effectively? Can you compare your peak usage of each license against how many licenses you actually own?
- Can it produce a cost analysis report based on this information?
- Most importantly, is it easy enough for you to install and manage? If it isn't, you won't end up using it, and it will join the ranks of shelfware.



different from NOS groups for charge-back purposes.

LANrecord comes with seven built-in reports, which can be modified. They cover chargeback information and basic usage and denial requests. They don't provide the same sort of analysis that



The alliance is a cooperative of users, consultants, educators and integrators that applies its technical and business skills to analyze and compare strategic network products. A list of alliance partners can be found on page 29.

Marks is a principal of Networks Are Our Lives, Inc., a network consulting firm based in Dutchess County, N.Y. She can be reached at 74002,2411@compuserve.com.

## Web sites

Continued from page 38

But as a result, the main marketing message the site is intended to convey — for instance, “buy our product” or “we’re the best at...” — is drowned in a sea of data. Case in point: the home page of Electronic Data Systems Corp.

Another problem lies in off-site links. It's all well and good to provide links to other sites, but that shouldn't be done at the expense of your own site. Links to other sites should be well hidden within your Web pages and only accessible after the user has had plenty of opportunities to acquire your message.

Finally, it's important to remember that the simplest approach can often work best in bringing your business on-line. Take the case of Renco Encoders, which operates a site with solid, albeit unremarkable, design.

Renco is an engineering firm, and its site isn't meant to entertain. Instead, it's built for people who understand the technology and its applications, as well as those looking for technical details about Renco's product line.

Renco's home page is an index to the rest of the site (check out the product chart), and the pages that detail individual products are consistent and to the point. The company doesn't currently sell on-line, which isn't surprising given the complexity of the product line. In the future, Renco won't have a choice — the market will expect it.

Renco also demonstrates an important point: A Web site doesn't have to cost a lot to be effective. The firm's costs for the first phase of HTML development, excluding the monthly costs to actually publish the Web site, were under \$9,000. Not a bad price to establish a foothold in a new marketplace, especially when you consider that a single order could pay for the project.

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Express Meter's or CentaMeter's reports do. There is no report of peak usage over time or recommendations for purchases.

Overall, LANrecord shows signs of the standard Version 1.0 disease — not all the kinks are worked out. While LANrecord may hold promise for future versions, it doesn't stack up with the other, more mature products.

Still, both LANrecord and AppMeter do meet basic metering requirements.

AppMeter provides better reporting and a larger feature set for basic needs, but its DOS interface may put off some users. For its part, LANrecord, despite its Windows interface, does not provide the level of control most environments will want. Its inability to queue users in restrictive metering environments makes its ability to perform chargebacks less attractive, and its reporting is more limited than AppMeter's. ■

**Network World Fusion**

Go on-line for a comprehensive look at metering tools from the Software Publishers Association. Link to <http://www.nwfusion.com>. Select NetRef, Reviews and Buyer's Guides, then Metering Software.

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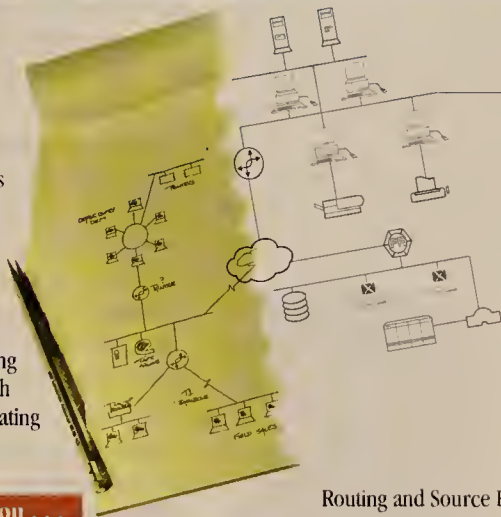
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### Locations and Dates

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<b>Atlanta, GA</b>	October 25-26	<b>New York, NY</b>	February 27-28
<b>Washington, DC</b>	November 2-3	<b>Philadelphia, PA</b>	March 12-13
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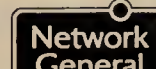
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*(continued from page 1)*

from catering to support and maintenance of its 16,000 PCs.

Outsourcing is hot. International Data Corp. (IDC), a market research firm in Framingham, Mass., estimates IT-related outsourcing revenues are growing 14.4% annually and will bust the \$26 billion revenue mark by 1998. Net outsourcing revenue, IDC says, is growing even faster — at a bit more than 19% each year — and will almost double from \$1.3 billion today to over \$2.3 billion in 1998.

So how do you determine whether you should take the outsourcing plunge and, if so, how deep should you dive?

Outsourcing practitioners and consultants say you need a structured approach to appraising your outsourcing needs that addresses strategic business and cost goals, as well as technology issues. And don't overlook the personnel considerations that could ensnare you in legal entan-

glements from an outsourcing deal (see story, this page).

#### Identify core competencies

Senior management — meaning the corporate executive committee level — should decide which processes are vital to the company mission and must remain in-house, says Dennis Torkko, a managing partner with Arthur Andersen & Co. who advises clients on outsourcing. The goal is to separate core strategic functions, which include those that provide competitive advantage, from less essential services.

That's the path DirecTV took. The firm, which started with just six employees, investigated billing operations at major companies and

found it to be a staff-intensive operation that involved data center management and computer hardware support — definitely not core competencies.

So the company handed the whole affair off to Digital. "We decided to hire a company that does this well and take advantage of what they have already learned," says Bill Butterworth, an executive vice president with DirecTV.

That's the same type of thinking Microsoft uses to find business partners. "All costs being equal, you benefit by handing it off because the other company is passionately devoted to being the best in

that area," says Michael Brown, chief financial officer at the software giant.

But not every noncore function is ripe for outsourcing, says Chuck Papageorgiou, a managing director with consultancy M.F. Smith Associates, Inc. in Atlanta. "If a noncore function is a competitive advantage or keeps you close to customers, outsourcing may not be the right move," he says.

Outsourcing may also be inappropriate if it's considered solely from a tactical perspective. Sometimes a central organization decides the company will never be able to bring a particular function under control — such as network support or data center management — due to politics with business units.

"The belief is, if you give the problem away, the third party will be able to magically make it disappear," says Jerry Cooperman, vice president and research director with Gartner Group, Inc., a consultancy in Stamford, Conn. This tactic generally doesn't succeed, he says, because the client hasn't invested the time to address the underlying business processes that may need reengineering.

Once an organization has identified those functions that must be performed in-house, the remaining essential services and functions are fair game for outsourcing. That's when you begin taking them one by one and asking lots of questions, including:

- Will outsourcing this function improve our management focus?
- Will outsourcing provide gains in flexibility, scope and expertise for the function?
- How will outsourcing the func-

tion affect relationships with customers and employees?

■ What does it cost to perform the function in-house vs. via an outside provider?

■ How much of the function should be outsourced?

When Bill Stella, vice president of information services at Arkwright Mutual Insurance in Waltham, Mass., asked those questions, flexibility and time savings surfaced as the chief reasons to job out a major WAN router upgrade. With a staff of just four employees supporting a nationwide network of more than 1,000

users, Stella didn't want to burden his staff with the product implementation.

"We could have struggled through the project ourselves, but it was more important to get the job done while maintaining existing service levels," Stella says. While Digital handled the project management for the implementation, Stella's staff spent time training on the new routers so it could hit the ground running when they went live.

"Outsourcing allows us to take some burden off our IS people and let them concentrate on more critical things," he adds.

#### The proper partner

The next step is to find the service provider that's right for you.

This involves deciding on the type of outsourcing relationship you need, which Torkko says is a decision driven by the scale and complexity of the function or process being outsourced. If you decide to outsource data network operations, you may want a more strategic relationship than if you jobbed out PC support service to a vendor.

You also need to understand your provider's cost structure, including its profit margins and what it needs to take away from the deal, just as the vendor needs to understand your needs, Torkko says.

Papageorgiou adds that you should consider the project personnel the vendor intends to put in place and reserve the right in your contract to have team members replaced at your discretion. "You don't want your company to be a training ground for any vendor," he says.

By the same token, Cooperman says outsourcing service providers should "not only share

in the losses, but should benefit from the profits, too." Toward that end, contracts should spell out penalties if performance levels are not met and the rewards

providers will receive should they exceed expectations.

"You're looking for a partner," agrees Microsoft's Brown. "You want them to succeed, too."

#### Monitor and evaluate

Contracts should also detail performance goals and a specific methodology for ongoing improvements, Torkko adds.

Indeed, as part of some outsourcing deals, Cooperman

has seen parties agree to have an independent auditor regularly evaluate the demands issued by the client against the service provided.

But all that monitoring and performance evaluation isn't worth it, users say, unless the project is focused on meeting business goals. "Outsourcing is all about economies of scale," says Brown. "If I outsource PC support to a global services company, I can bring that expertise to bear worldwide in an instant. That's an efficient relationship."

Adds Arkwright's Stella: "It's a very effective way to work, but it takes commitment from both sides." ■



**"Every activity costs something. Learn to become more disciplined about what you ask for."**

Dennis Torkko

## Outsourcing may beckon, but don't forget the people factor

**C**ompanies are turning to outsourcing to curb costs and reach for strategic goals, but the attention they pay to the human aspect of such deals is insufficient.

That's the assessment of Grover Wray, director of human resources for the contract services group at Arthur Andersen & Co. "A lot is at stake in these projects," Wray says. "Communication and support for employees needs to be open and persistent early on."

Organizations that underplay the importance of the human element risk having projects undermined, and may even be open to legal repercussions, Wray says.

One of the worst deeds management can perpetrate is to announce an outsourcing project, and then say nothing for another month or more. "Tell employees you don't know all the answers yet but promise them you'll meet weekly to apprise them of changes, and then stick to your word," Wray advises. That type of open dialogue will alleviate worry and let employees focus on work.

You also should have the outsourcing provider map out a transition plan — on paper — that tells employees exactly what will happen, and when. "Have them spell out everything," Wray says, including when interviews will be conducted and employment status revealed. "The idea is to create a temporary mental map so employees don't panic."

It's also important to involve human resources personnel from the start, during the outsourcing request for proposal process, Wray says. HR professionals can advise you what to tell employees, and more importantly, what not to say.

Once you announce a deal with an outsourcing provider, Wray warns that you should not speak to employees about possible employment, or even discuss the number of employees the firm intends to hire and the skills they seek. "That could leave both of you legally responsible for making a binding employment offer," Wray says. That type of error cost one company more than \$10 million in a settlement with workers, he says.

Above all else, "remember these people [employees] are responsible for the quality of service you offer," Wray says. "Don't treat them poorly, or your service may suffer."

By Charles Bruno



**Wray advises to "create a temporary mental map so employees don't panic."**

### BEFORE YOU TAKE THE OUTSOURCING PLUNGE, CHECK OUT THESE ADDITIONAL RESOURCES:

- The law firm Fenwick & West's Advanced Issues In Outsourcing Agreements site offers a gold mine of legal information along with tips on structuring an outsourcing deal.
- The Outsourcing Institute's home page — to be launched by the end of this month — is slated to include discussion groups, a service provider buyer's guide, primers, news, and a library of papers and other outsourcing articles.
- A think piece from Jim Smith, general manager of BEST Consulting's systems integrated division, on evaluating outsourcing's promised gains.
- Discussion groups on outsourcing.
- To follow the links to these sites, connect to <http://www.nwfusion.com>. Select Careers then Outsourcing.

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# Management Strategies

**Covering:** Career Insights and Innovations  
in Managing Staff, Budgets and Technology

## Briefs

■ **Contingency Planning Research, Inc.** has published an **Information Technology Liability Issues** white paper that discusses the legal ramifications of a disaster that prevents delivery of critical services.

The free paper details what IT organizations and their management need to know about liability protection in the event of a disaster. The white paper discusses the applicable regulations, definitions of liabilities, who can be held liable, actual court cases and steps to ensure compliance. In addition, the penalties for noncompliance are also presented.

Contingency Planning Research: (800) 277-5511.

■ **Individual Software, Inc.** is now shipping **Individual Training for Windows 95**, an interactive, computer-based training program.

The program enables managers to make Windows 95 training available to end users across the network and in training labs. A skill assessment module is also available for enabling managers to evaluate user proficiency.

Individual Training for Windows 95 helps end users understand features such as working with the new user interface, employing applications, printing, faxing, working with files and folders, and creating shortcuts.

In addition, new Windows 95 features, such as Taskbar, Start menu, the Explorer and My Computer, are explained. The package also has a glossary, index and lesson quizzes to reinforce learning.

The training program runs under Windows 3.1, so managers can start Windows 95 training before transitioning to the new operating system.

Individual Training for Windows 95 is priced at \$69.95 for a single-user version and \$499.95 for the network version. The Skill Assessment software costs \$99.95 for the single-user version and \$650 for the network version.

Individual Software: (510) 734-6767.

## Taking responsibility: A bitter pill for mgmt. ills

*But this may be the only antidote for ZRS-stricken leaders.*

**By Chuck Papageorgiou**

There's a management ailment going around that can make a good reengineering project go bad or a strong company go south. It's called ZRS for zero responsibility syndrome, and it's reaching epidemic proportions in many companies.

You'll know that a manager suffers from ZRS when he talks about the latest breakthroughs in management strategies but never takes responsibility for making them happen. When a strategy or approach he has selected looks like it's headed for failure, he quickly looks for someone or something else to blame.

### The antidote

Fortunately, there is an antidote: the full responsibility management (FRM) pill. FRM gives you a solid dose of reality, enabling you to understand that you are ultimately responsible for the success or failure of your management initiatives, regardless of outside influences.

Some years ago, I thought ZRS was a rare disease, but I eventually realized it is all too common and its symptoms

are consistent.

Take, for example, one of my clients — a chief executive officer who genuinely wanted to change the way her company did business and "blow the doors off the competition." She wrote lots of memos about new management paradigms and even attended a few seminars with her staff.

When nothing happened, she was surprised. First, she complained that nobody listened, then she and her staff looked to assign blame to anyone but themselves. They began pointing fingers at Japan, then the union, later the global economy and, finally, the bureaucrats in Washington, D.C.

She assumed that because she read the books and understood new management concepts, she didn't have to practice them.

On a crisp fall day, I had a long private session with this CEO. I asked her questions that made her look at the real-world causes of her problems, instead of assigning blame. How are the competition's management strategies better than yours? I asked. How much better, or cheaper, are their products? She did not

### Time to take your pill

When you hear some of these statements, it's time to administer the full responsibility management (FRM) pill by asking these questions.

Statement	Question
It is not the network's fault that users are experiencing slow response time. It must be the application.	Who is responsible for overall performance as measured by the user?
The server went down because we had a power failure.	Who in the organization is responsible for all aspects of server availability?
The reason IS is not respected in the user community is because that crowd doesn't understand us.	How much time do IS executives set aside to meet with users in the field?

Find out if you should pop the FRM pill by taking the short test posted on Network World Fusion. Visit <http://www.nwfusion.com> and select Careers.



know. She was laying so much blame, she took her eyes off the competition.

She moaned that her company had to lay off people and again looked to place blame. I asked her instead if she had a hiring plan in place that would take into account a downturn in the market. She responded that when she started the company 10 years before, she believed the business would continue growing with the market and never planned for a downturn.

It went on like that for a while, making it a difficult day for both of us. But she eventually agreed there were many changes she could effect on her own.

FRM is indeed a bitter pill for many managers. Some agree to take the pill but hide it under

their tongues. They go back to their business units, spit it out and change nothing.

These are the managers who make my job challenging; they bring a consultant in to help them change their worlds, only to lay the blame on the outsider if the plan doesn't succeed.

Granted, consultants — myself included — are not always all-knowing, wise, fountains of useful information. Sometimes, we make mistakes and wrong assumptions.

But here again, managers who listen to bad advice without challenging it have come down with ZRS. They need to argue every point with their consultants, debate every idea, challenge every assumption and reach their own conclusions.

### Questions to ask yourself

So the next time you decide to become a change agent yourself or hire a consultant to be one, consider these questions: Is your company suffering from ZRS? Are you looking for a consultant to have somebody to blame when things don't work out? Is the FRM pill missing from your company's first aid kit?

If the answer to these questions is yes, be prepared to fight a long battle. Take responsibility for your success, and make it clear that you will accept no excuses for poor results.

Papageorgiou is the managing director for the Atlanta practice of M.F. Smith & Associates, a consulting firm headquartered in Morristown, N.J. He can be reached via the Internet at [chuck.papageorgiou@internetmci.com](mailto:chuck.papageorgiou@internetmci.com) or by phone at (770) 641-6248.

## MANAGEMENT DATA ON-LINE

Network World peruses on-line services for interesting hints or tools that will make your job easier. Here are a few:

### Job Source

Recruiting firm Source Services Corp. has established a World-Wide Web site that has a few interesting elements. For instance, there are samples from the firm's salary surveys and a strategic hiring guide that provides hints on everything from interviewing job candidates to making a job offer.

### The Peter Huber page

You now have Web access to the works of Peter Huber, the author of *The Geodesic Network*, a 1987 Department of Justice report reviewing the divestiture of AT&T. Huber, now a senior fellow

of the Manhattan Institute for Policy Research, has written many other books, including *The Geodesic Network II: A 1993 report on competition in the telephone industry*.

You'll have to pay for those books, but Huber has a few reports and articles available for downloading, with *Estimating the Costs of Telecommunications Regulation* chief among them.

### Fiber facts

Fotec, Inc. is providing access to a number of fiber-optic testing methods on its Web site. The firm's fiber-optic test guide leads you through the process for measuring optical power, conducting single- and double-ended cable tests, and measuring optical return loss. There is also a frequently asked questions file that addresses fiber-optic testing.

Visit <http://www.nwfusion.com> for links to the Web sites mentioned here. After you log in, select Careers.





## Mobile Communication Networks

Your network expertise is your ticket to  
exciting opportunities for

### International Assignments

AT&T Network Systems is a leading global manufacturer and marketer of network telecommunications products, offering communications service providers virtually everything they need to build and operate their networks.

AT&T Network Systems' Professional Services Business Unit in conjunction with AT&T Bell Laboratories, a world leader in innovation and technology, has been selected for major projects for International Assignments. This will entail the implementation, operation and administration of a large-scale mobile communications network; obviously, an assignment of considerable importance promising global visibility for all participants.

Supporting a General System for Mobile Communications (GSM) network, you will take on key operations and administrative assignments. Numerous positions exist for seasoned professionals to work for one to three years.

#### NETWORK MANAGER

You will be responsible for planning, directing and controlling the operations and administration of the GSM network. This will include planning, design and implementation in all network management areas in addition to directing system infrastructure growth engineering activities. Requires a BS in Engineering or related field and solid experience in network operations, maintenance, planning, design implementation and engineering, assurance & certification; systems performance monitoring; and inventory management.

#### ENGINEERING SUPERVISOR

You will be responsible for overseeing the numerous distributed computing systems and applications that comprise the total GSM network. This will include implementing operations strategies and certifying adherence to operations guidelines. Requires a BS in Electrical Engineering, Information Technology or a related field, 5-7 years experience in network operations and maintenance in addition to a minimum of 1 year in GSM network management or wireless systems operations.

#### NETWORK TECHNICIANS

You will provide in-field technical support including hardware/software platform administration, maintenance, repair, retrofit and growth for the MSC, HLR, VLR, AUC and EDR network elements. College degree preferred.

#### NETWORK ENGINEERS

Several positions available involving a full range of network responsibilities related to the Engineering Technical Assistance Center. This will include managing and maintaining system configurations and software upgrades, developing system operations procedures for escalation, improving system reliability and developing methods to measure improvements. To qualify, you'll need a BS/MS in Electrical Engineering or Computer Science and experience in one of the following: MSC development, architecture and software; telephony and wireless technology, RF engineering, operations/maintenance of BSS equipment; alarm routing, operations/maintenance of telephone networks. Excellent interpersonal skills a must.

*All positions require valid passports.*

Our compensation, benefits and relocation packages are what you'd expect for overseas assignments.

For consideration, send your resume to:  
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Microcomputer Support Specialist: Install, maintain and troubleshoot Novell 3.12 and AppleShare local area networks; provide hardware/software support to end users; train and supervise faculty and students on different systems and software. Position requires B.S. in Computer Information Systems and knowledge of (1) Novell 3.12 and AppleShare local area networks; (2) C++ and FOCUS programming languages; (3) ClarisWorks, HyperCard and FileMaker Pro applications software. 40 hrs/wk; 2-11 pm; salary of \$23,700.00/yr. Send resume with Social Security No. to the Indiana Dept. of Workforce Development, 10 N. Senate Ave., Indianapolis, IN 46204-2277, Attention: Gene R. Replogle. Include ID#3379592 with response. Applicants must be eligible for permanent employment in the United States.

Senior Systems Analyst: Customize software for a financial management account package and other packages using SQL \*Plus and Oracle 7.0 database tools; document applications, upgrade software, establish procedures and guidelines; assist in installation and maintenance of a Novell Network System and peripherals; train end users in use of system applications and software; install and maintain CC:Mail for Windows; liaison with other agencies; train and supervise 3 systems analysts. Position requires M.S. degree in Computer Science and two years prior experience in systems analysis including experience using SQL \*Plus and Oracle database tools, and installation of Novell networks. 37.5 hrs/wk; 7am-3:30pm; salary of \$18.56/hr. Send resume with Social Security No. to the Indiana Dept. of Workforce Development, 10 N. Senate Ave., Indianapolis, IN 46204-2277, Attention: Gene R. Replogle. Include ID#3379600 with response. Applicants must be eligible for permanent employment in the United States.

Database Programmer - Analyst. Denver Metro Area. Maintain 1.5 million customer database at state of the art operation. Develop, test and debug application programs in a multiproduct environment. Design system flow in a relational database environment. Perform leads management using queries and develop scripts. Migrate data between mainframe and DOS environment. Train telemarketers and staff in using existing applications (MS Word, MS Excel, Act for Windows, Paradox 5.0 for Windows). Resolve conflicts and analyze reports. Maintain Novell 3.12 network system (100 users) and perform backups. Ensure that hardware and software work harmoniously in DOS, Windows, Macintosh and Novell Network environments and introduce upgrades. Maintain Northern Telecom Options II PBX telephony system. Must have Masters Degree in Computer Information Systems or its equivalent, knowledge of Paradox with Object Oriented concepts, working knowledge in relational databases and Novell Networks, UNIX, Macintosh and DOS operating system, SAS/SPSS, troubleshooting computer hardware, software and network problems. 40 hrs./wk. M-F, 8am to 5pm, \$34,000/year. Apply by resume to: Colorado Department of Labor and Employment, Employment Programs, ATTN: Jim Shimada, Tower 2, Suite 400, 1515 Arapahoe Street, Denver, CO 80202-2117, and refer to order No. CO4450401.



## UNIVERSITY OF NOTRE DAME

### NETWORK ANALYST POSITIONS

The Office of Information Technology is currently networking the campus. Most academic and administrative buildings have been completed and a project is underway to network the 27 student residence halls. To support services that utilize this infrastructure, Enterprise Computing Services seeks a senior network analyst and a network analyst. These positions will obtain, develop and support software related to enterprise networking services.

Applications will be accepted until the positions are filled. Candidates should possess a relevant bachelor's degree; an advanced degree is preferred. In-depth knowledge of the networking internals of at least one multi-user operating system, preferably UNIX, is required. TCP/IP experience and two to five years advanced C programming experience are essential. More information about these positions can be found at: <http://www.nd.edu/~sexton/nw.html>.

**Candidates should apply with resume and cover letter to:**

Senior Network Analyst or Network Analyst  
Screening Committee  
Human Resources  
Notre Dame, IN 46556

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### DIRECTOR OF INFORMATION SYSTEMS

An organization located in the north suburbs of Pittsburgh has an exceptional opportunity for an experienced professional to serve as Director of Information Systems. This position will be responsible for supervising and guiding all activities relating to the information systems used by the organization to conduct its business that includes managing the information technology and its application, managing the telecommunications hardware and software, and managing all other office automation services. Investigating and leading the implementation of new technology for the organization's operations and developing and implementing long-range plans, including budget preparation and control, for the growth and maintenance of all information systems is also a position requirement. Other requirements include:

- The ability to perform administrator-level functions on Macintosh, DOS/Windows, Novell and Unix systems,
- Well-developed user-level computer skills, particularly in Internet use, hypertext document creation and desktop publishing,
- Ability to program in Perl, C, AppleScript,
- Bachelor's degree in computer science, information science or a related field,
- Supervisory experience and
- Ability to participate in a high level committee environment

Send resume and letter of interest outlining how you match up to the position including salary requirements, by January 5, 1996, to: Box #B5223, Network World, 161 Worcester Rd, Framingham, MA 01701.

SR. Development Engineer: M.S. in Chem. E., Electrical E. or Petroleum E. plus 3 yrs. experience on job or 3 yrs. experience as System Manager required (in lieu of M.S., employer will consider Bachelor degree in the same alternate fields of study plus 5 yrs. of same alternate experience also qualifies). Researches, designs, and develops computer hardware and system software for engineering applications in oil field service industry. Applies principles and techniques of computer science, engineering, and mathematical analysis, to analyze software and hardware requirements including the interface to determine feasibility of design, operational and performance requirements of overall system. Develops and directs system testing procedure, and documentation. Provides field support for customers worldwide. Must be knowledgeable in Economic Evaluation of Projects; Reservoir Interpretation; Pumping, Acidizing & Cementing (3 hrs. course work or 1 yr. hands-on experience in each area. These alternate experience requirements are inclusive in the 3 or 5 yrs. experience stated above). \$54,000.00/yr., 40-hrs. wk. Applicant must have proof of legal authority to work in the U.S. Apply at Oklahoma State Employment Service 11654A E. 21st. St., Tulsa, Oklahoma 74129 (ID#7209) Job Order# 198120. Ad Paid by An Equal Employment Opportunity Employer

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## MARKETING:

### Public Relations Manager

Will work closely with corporate and marketing management to accelerate public awareness of Xylan's products, technologies, and market position. Public relations experience in the networking industry is required; router, LAN switch, and/or ATM switch experience is an advantage.

### Senior Product Evangelist

Will help to develop and communicate Xylan's message in a variety of ways, including specific account activity, seminars, presentations at public forums, and others. Will be responsible for the Western US. Experience in the networking industry as a product evangelist, director of marketing, or senior product manager is required.

### WebMaster

Will take full charge of all phases of Xylan's Web site design and implementation. Should understand both marketing and technical aspects of Web site implementations. Will design and implement updates to the site and will supervise internal and contract resources as appropriate. Requires experience in the design and implementation of Web sites and a thorough knowledge of Web servers, Web browsers, http, html, and associated development tools. Experience with vrml, Java, or similar complex languages is desired.

### Writer

Will write and edit data sheets, brochures, white papers and other marketing materials for Xylan's literature program. Five years marketing writing experience in the networking industry is required and experience with LANs, routing, and/or LAN switching is preferred.

## SERVICE & SUPPORT:

### Sr. Product Support Engineer - Internetworking

Will have a minimum of 3 years of LAN/WAN product support or similar experience (end user experience is a plus). Good writing skills are a must. This person must have the ability to work well in a team environment. Good technical knowledge of routing/bridging/switching and at least two of the following technologies - Ethernet, token ring, FDDI or ATM - are required.

### Sr. Product Support Engineer - Network Management

Will have a minimum of 3 years network management product support or similar experience (UNIX administration experience is a plus). Good writing skills are a must. This person must have the ability to work well in a team environment. Good technical knowledge of UNIX, SNMP, HPOV, SunNet Manager, NetView AIX and general networking are required.

### Sr. Customer Support Engineers

Will have a minimum of 3 years of LAN/WAN customer support (telephone) or similar experience. Good customer relations capabilities are a must. This person must have the ability to work well in a team environment. Good overall network knowledge (NOSes, routers, bridges, switches, etc.) and excellent trouble-shooting skills are required.

### System Certification Engineer

Will have a minimum of 2 years of experience in the development, management and testing of networking systems. This person must have the ability to work well in a team environment. Knowledge of network equipment, NOSes, test equipment and network applications are a must. Third party test management experience (e.g., UNH, ENL, etc.) is preferred.

## Technical Trainer

Will have a minimum of 2 years experience in the development and delivery of technical training material to end users and/or resellers. Excellent presentation skills are required. Good overall networking knowledge is required and router/ATM/switch course development is preferred.

## DEVELOPMENT:

### Senior Software Engineer

Will have a minimum of 8 years of programming data communication systems with hands-on experience in at least 3 of the following technologies: frame relay, LAN/WAN internetworking, ISDN, Ethernet, token ring. This person must have a high proficiency in C language, and the ability to design, write specifications, program, and debug in an embedded system environment. 68000 assembly language and 68360 programming experience are preferred.

### Senior Test Engineer

Will have a minimum of 8 years of programming data communication systems with hands-on experience in at least 3 of the following technologies: frame relay, LAN/WAN internetworking, ISDN, Ethernet, token ring. This person must have the ability to take full responsibility for testing embedded communications systems: writing test plans, working with software and hardware engineers, debugging, testing and verifying features, problem tracking. Must be able to travel to customer sites during rollout and early release phases.

## SALES:

### Territory Sales Managers

Responsible for development of various territories, provide complete market coverage, as well as targeting major accounts. Minimum of 3 - 5 years of successful selling in the LAN/WAN market. Excellent selling and technical skills are required in the routing/bridging and switching arena, with emphasis on Ethernet, token ring, FDDI and ATM. Excellent communication skills are required.

### Systems Engineer

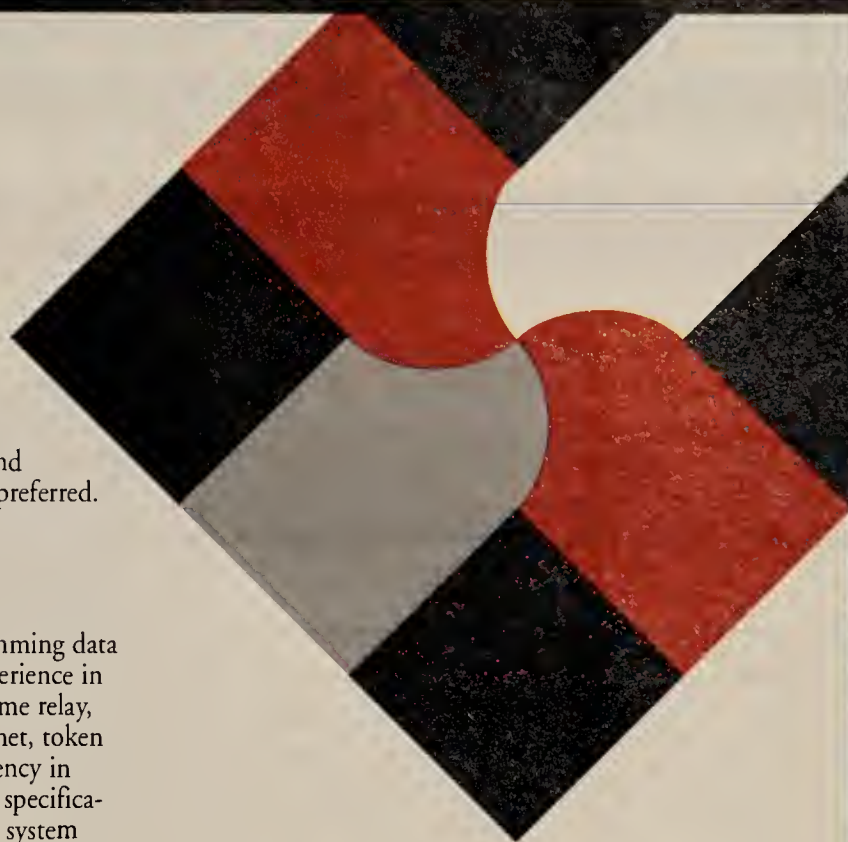
Provide pre-sales support to sales reps, customers, VARs, and OEMs. Assist in technical training, seminars, writing and preparation of RFP's. Will have a minimum of 3 - 5 years of LAN/WAN technical experience (directly with end users a plus). Excellent communication and technical skills are required. Must be familiar with routing/bridging and switching markets. Familiarity with Ethernet, token ring, FDDI, ATM and network management are highly desirable.

### Regional Manager - Commercial Sales (West)

Will drive revenues within the Western US from the Rockies to the Pacific Coast. Will identify and develop each market in the territory to improve coverage and market share each year. Will oversee the development of channels within the territory to improve their ability to sell and support Xylan products. Will manage all territory managers and system engineers in the West, and will be responsible for the management and accuracy of forecasts within the region.

### Canadian Country Manager

Will be responsible for driving revenues and market development throughout Canada. Will identify and develop each market in Canada to improve coverage and market share each year. Will oversee the development of channels within Canada to improve their ability to sell and support Xylan products. Will manage all territory managers and systems engineers in Canada, and will be responsible for the management and accuracy of forecasts within Canada.



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### National Telco Sales Manager

Will be responsible for establishing Xylan solidly in the telco industry throughout the United States. This is a senior sales/marketing position, which we prefer but do not require to be based in the East. Will work with regional managers, territory managers, systems engineers, and Xylan's established channels. Will also be establishing new sales and marketing channels. Excellent selling and technical skills are required in the routing/bridging and switching arena, with emphasis on Ethernet, token ring, FDDI and ATM. Excellent communication skills are required.

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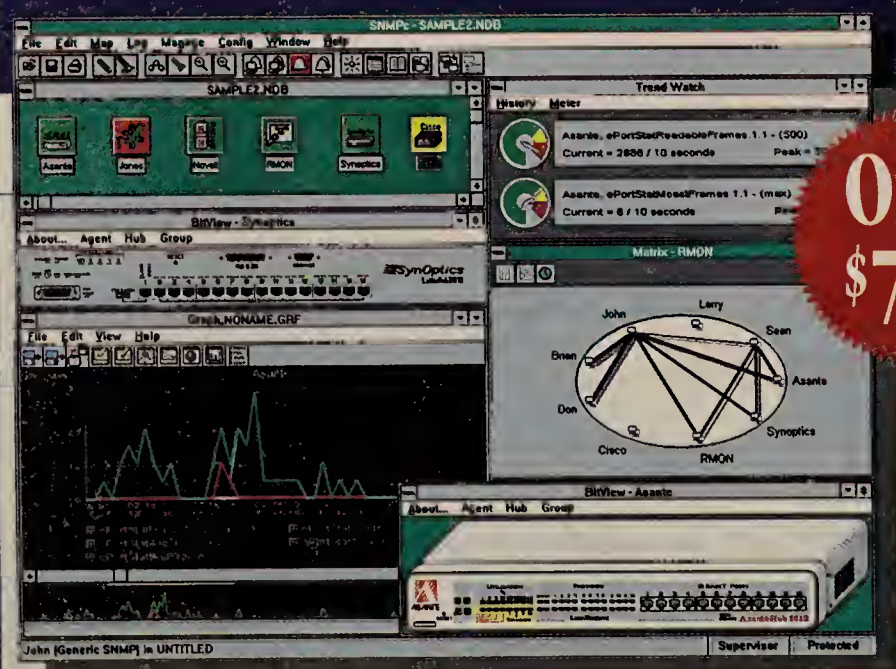
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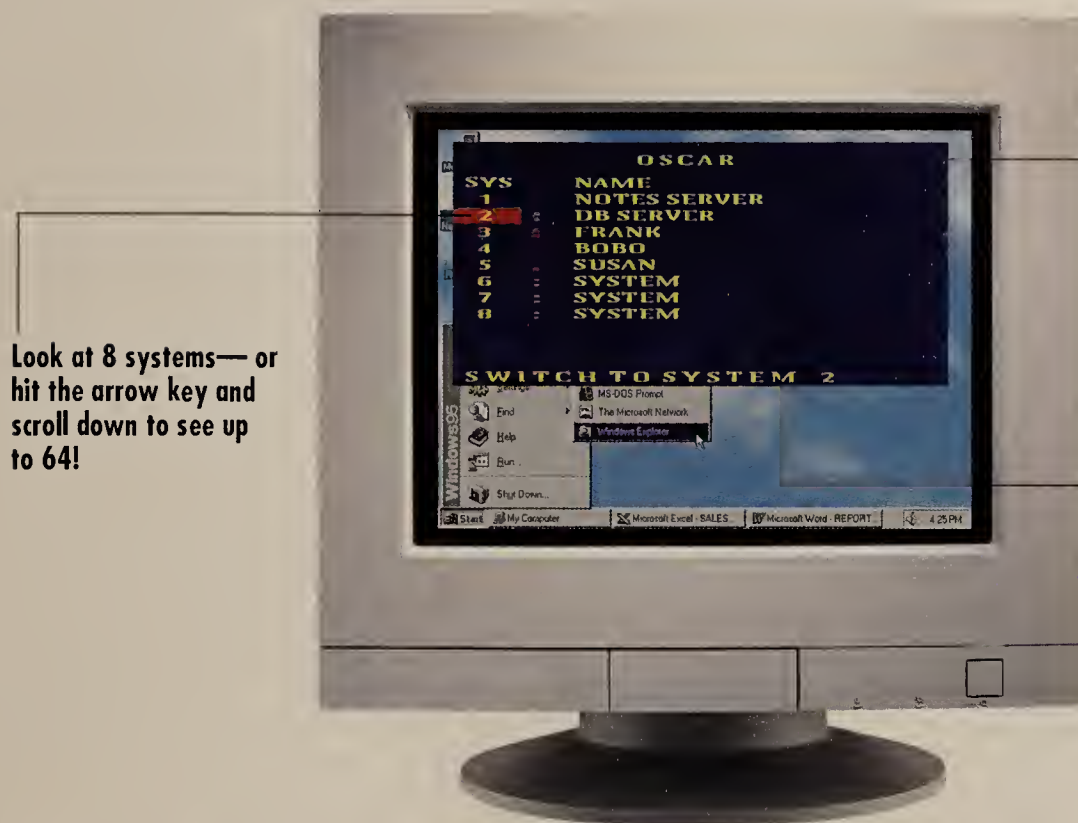
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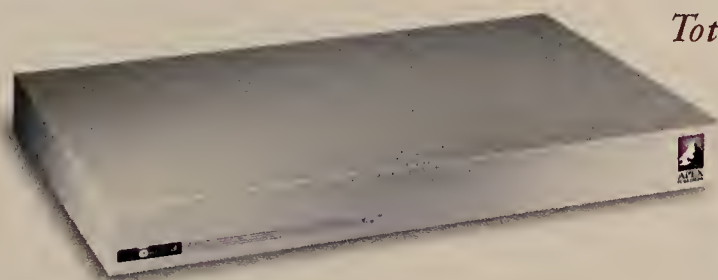
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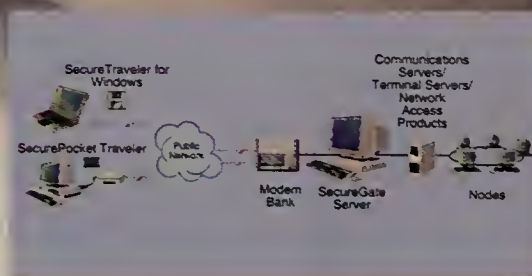
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- ☐ Hewlett-Packard PA-RISC  
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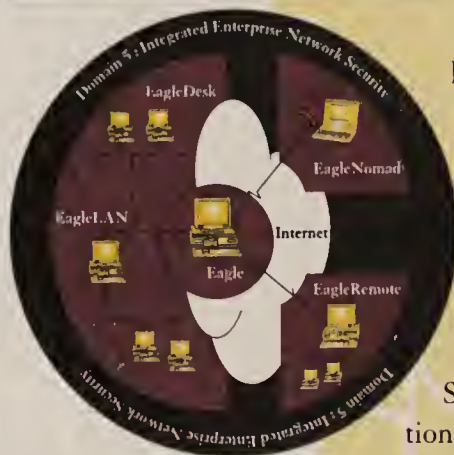
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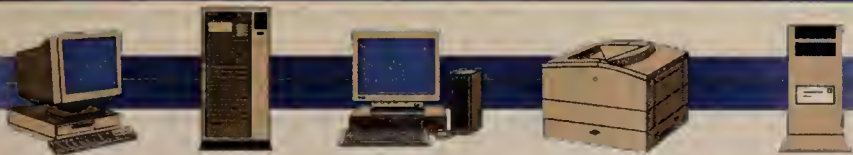
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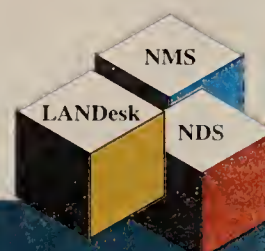
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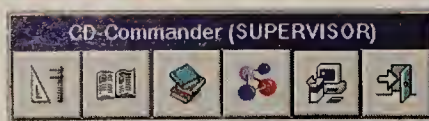
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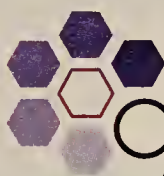


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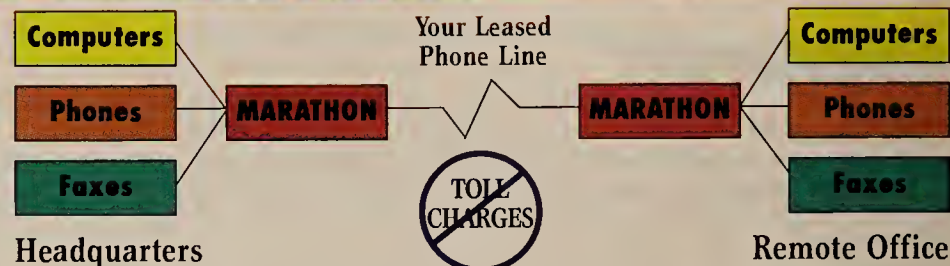
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Steve Rigney, PC Magazine, Network Edition, August 1995

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# New Frontier Technologies Software Brings NetWare Users to the Internet

By ANN KRAUSS

Frontier Technologies Corporation has announced the first NT-server based product that offers Internet access, TCP/IP and host connectivity for Novell NetWare environments. Called CyberJunction™, the product combines an innovative transmission gateway with a robust suite of Internet and host connectivity applications. This enables NetWare clients to connect to the Internet and other hosts with speed and security without running TCP/IP on every desktop.

CyberJunction is bundled with Frontier's robust web server, SuperWeb™ Server, allowing NetWare users to improve internal and external communications through the World Wide Web. The client product includes Frontier's award-winning Internet applications from SuperTCP Suite 1.2 and SuperHighway Access 2.

CyberJunction provides IPX to IP bridging through a Windows NT-based server, eliminating the need for TCP/IP software on every desktop. This protects the users' investment in NetWare and avoids the extra administration required to manage dual IPX and TCP/IP protocol stacks on each client PC. Transmission speed for customers is dramatically improved. By utilizing an NT-based solution rather than a NetWare NLM solution, performance of the NetWare network is not impacted. Neither the NetWare server nor client have individual IP addresses, protecting the LAN from intrusion from the Internet. This product also prepares companies for a gradual migration to an open-system TCP/IP environment.

"CyberJunction demonstrates Frontier Technologies' continuing commitment to develop market-driven product solutions," said John Teitgen, president of Frontier Technologies. "There is a huge installed base of NetWare networks with users that want to experience the benefits of the Internet. CyberJunction is an extremely easy-to-install, powerful and cost-effective solution that allows NetWare users access to the Internet and to the corporate TCP/IP network. In addition, the SuperWeb Server brings the power of web technology to the NetWare environment, allowing companies to improve their communications both internally and with the outside world."

## CyberJunction Components

CyberJunction is a powerful NT-based IPX to IP gateway. The product is designed specifically for work groups, and includes a complete set of Frontier's award-winning TCP/IP and Internet applications, including a multi-protocol, commercial-grade browser, Internet organizer, MIME Email, telnet terminal emulation, FTP client/server, TN 3270, VT320, VT100 and remote utilities.

"CyberJunction fills a strategic gap in the market by providing Novell users with greatly improved connectivity and security, while at the same time giving their customers access to information via the World Wide Web," said Frontier Technologies senior product manager Joe Haley. "We provide a migration path to NT-based applications while protecting the embedded NetWare infrastructure."

Frontier's SuperWeb Server is a complete "enterprise information system." By combining client and server components, the SuperWeb Server dramatically improves the

level of communications between workgroups, customers, suppliers and vendors. "In a competitive world, information is a weapon that separates winners from losers," said Haley. "SuperWeb Server gives its users a competitive edge."

## Pricing and Availability

CyberJunction is available through Frontier Technologies' direct and reseller channels.

CyberJunction is sold in 5, 10, 20, 50 and 100-user packages; pricing starts at \$1795 for a 5-seat license. The SuperWeb Server is included with 50 and 100-user packages, and is otherwise available as an add-on for \$795 with 5, 10 and 20-user packages.

Frontier Technologies Corporation is a supplier of Internet, networking and TCP/IP applications for personal computers. Frontier's networking software enables individuals to be

more productive and business to be more competitive on a global basis. Headquartered in Mequon, WI, Frontier has offices in California, Pennsylvania, Europe and India, and employs more than 140 people worldwide.

CyberJunction, SuperWeb Server, SuperTCP Suite, Internet Organizer, SuperHighway Access for Windows and SuperHighway Access CyberSearch are trademarks of Frontier Technologies Corporation.



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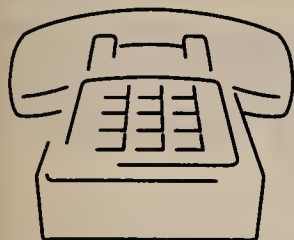








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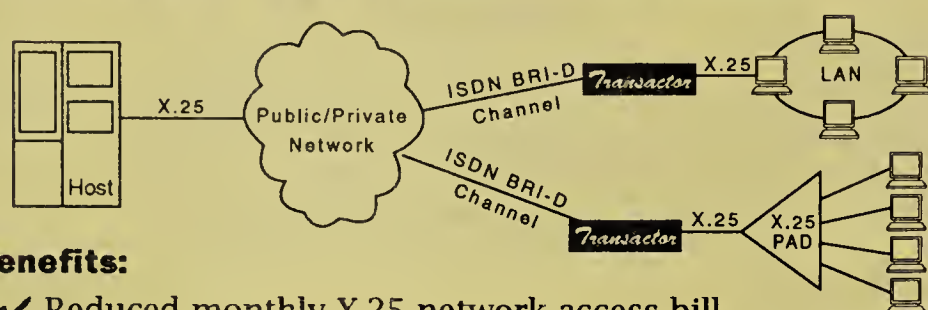
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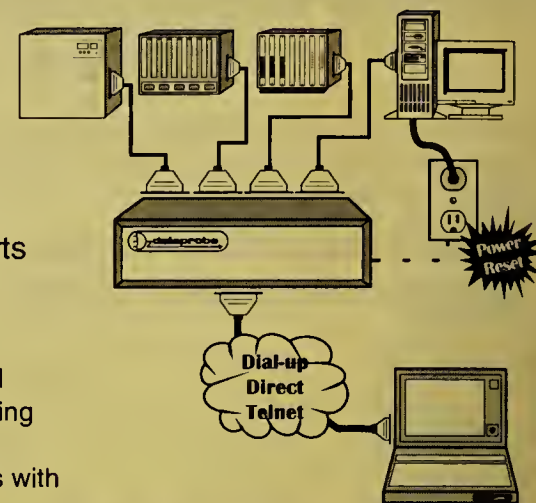
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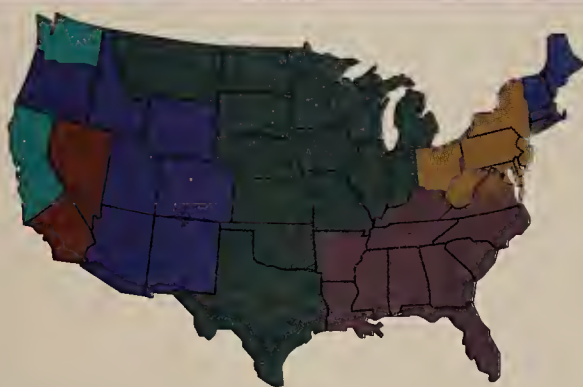
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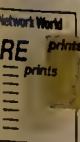
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# NetworkWorld

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# Back to Reality

## Network managers should plan now to avert career disaster

**S**ome journalists are born with an odd gene that self-activates in December. The gene seizes control of their fingers, forcing them to type scintillating analysis stories titled "Internet dominated news in 1995" and "Networks got faster this year."

Those of you not born yesterday probably knew that. Typical network managers are probably depressed by those articles. This nonnews only reminds readers of how far they trail progress.

tions title, an annual raise, an office with a door — don't anymore. What matters today is having a job, along with a good chance that you'll bank the next paycheck.

Layoff announcements are going through the roof. Yet pledging allegiance to your company won't help. A merger can make your position obsolete overnight. So can directives to squeeze more efficiency from your operation.

Furthermore, consider the following. Salary is a good barometer of corporate appreciation. But the net folks that fared the worst this year in terms of salary increases were senior net managers, according to *Network World's* salary survey published on Sept. 25. The average change in salary for top dogs was a 10% cut.

Equally depressing were substantial drops in the cost to hire new network employees. News like that should make you wonder if the big boss is hot to send you packing.

The network industry's profits and stock prices are skyrocketing, but you cannot tell that from salaries of people in the field. Networking may be critical for business, but business is placing less value on people who do networking.

One reason is the nature of your job is changing. In the late 1980s, the president of a peer-to-peer LAN operating system company quipped that by the mid-90s we'd need an army matching Minnesota's population to manage every LAN. The

company later folded, but his prediction was right on target.

The 40-odd million PCs on LANs definitely need an army of caretakers. Funny thing is that yesterday's net managers have graduated to newer, more complex challenges. Today's LAN manager often is an administrative assistant who handles routine, nontechnical tasks such as adding and deleting users, as well as performing backups.

The relative simplicity and stability of today's LAN technology doesn't need high-powered caretaking.

"Ah," you say, "but my company will always need my expertise because IP inter-networking, virtual LANs, ATM and other new technology is complicated."

You're right — for now. But don't bet on that idea down the road.

Net vendors want to make their products easier to use. Providing you with job security is not high on their list. Already, vendors are having a tough time proving that new boxes are not commodities.

Many of these vendors dislike selling to network managers. "All they do is focus on technology and miss the big picture," they say. "We'd rather pitch the CFO." Translation: You're being squeezed from the equation.

That does not mean that the technical aspects of planning and implementation are unimportant. Once the gear is up and

running, however, companies need only a handful of net brains for maintenance.

Management tools for virtual networking are missing today. But that's a temporary omission. Once they appear, this thorny aspect of networking will become a simple (and low-paying) administrative task.

Some firms already see the light. They are outsourcing portions, or even all aspects, of network support.

Eventually, the primary job market for network experts will be with outsourcing companies, not end-user organizations. And much of the work done at outsourcing farms will be processed by low-level technicians.

The migration of private network services to the public net will accelerate this trend. ATM will wipe out the difference between LANs and WANs. Network management then will become the province of public network service providers, which will easily manage the end-to-end process.

Forces like these ought to inspire all network managers to give serious thought to their career direction. The future is not determined by a job as much as by the person who holds it.

*Say it ain't so! Tell Buerger why his theory won't guide your New Year's job resolution by writing to dbuerger@pipeline.com.*

### New Year's Resolutions

#### 1. Find a new job?



David J. Buerger

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*Voices from the reader network*

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**Mark Culotta, network design engineer, ComEd, Chicago**

■ "Cabletron chose wisely to make an acquisition in the fast Ethernet space. They bought much-needed technology rather than just making an acquisition for acquisition's sake. Many Cabletron customers, including myself, are eager to get our hands on 100M bit/sec boxes, and I think the SMC technology

will help speed things along."

**Barbara Maaskant, director of information services, Rollins School of Public Health at Emory University, Atlanta**

■ "I've been clamoring for a 100Base-T switch module for my MMAC-Plus for a while, and if the SMC deal means that the fast Ethernet stuff will ship earlier, then that's good news."

**John Scoggin, supervisor of network operations, Delmarva Power, Newark, Del.**

*NEXT WEEK: Don't miss "Abend," our back-page column that alternates with "CyberSpeak" and brings you humorous items, oddities, marginalia and other insights from the Internet and elsewhere. Send items to nwnews@nw.com or get in touch with us any other way listed on page 5.*





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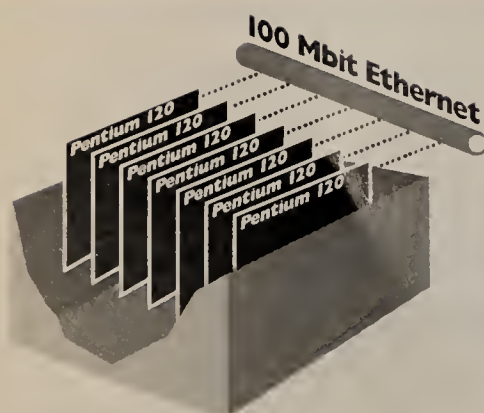
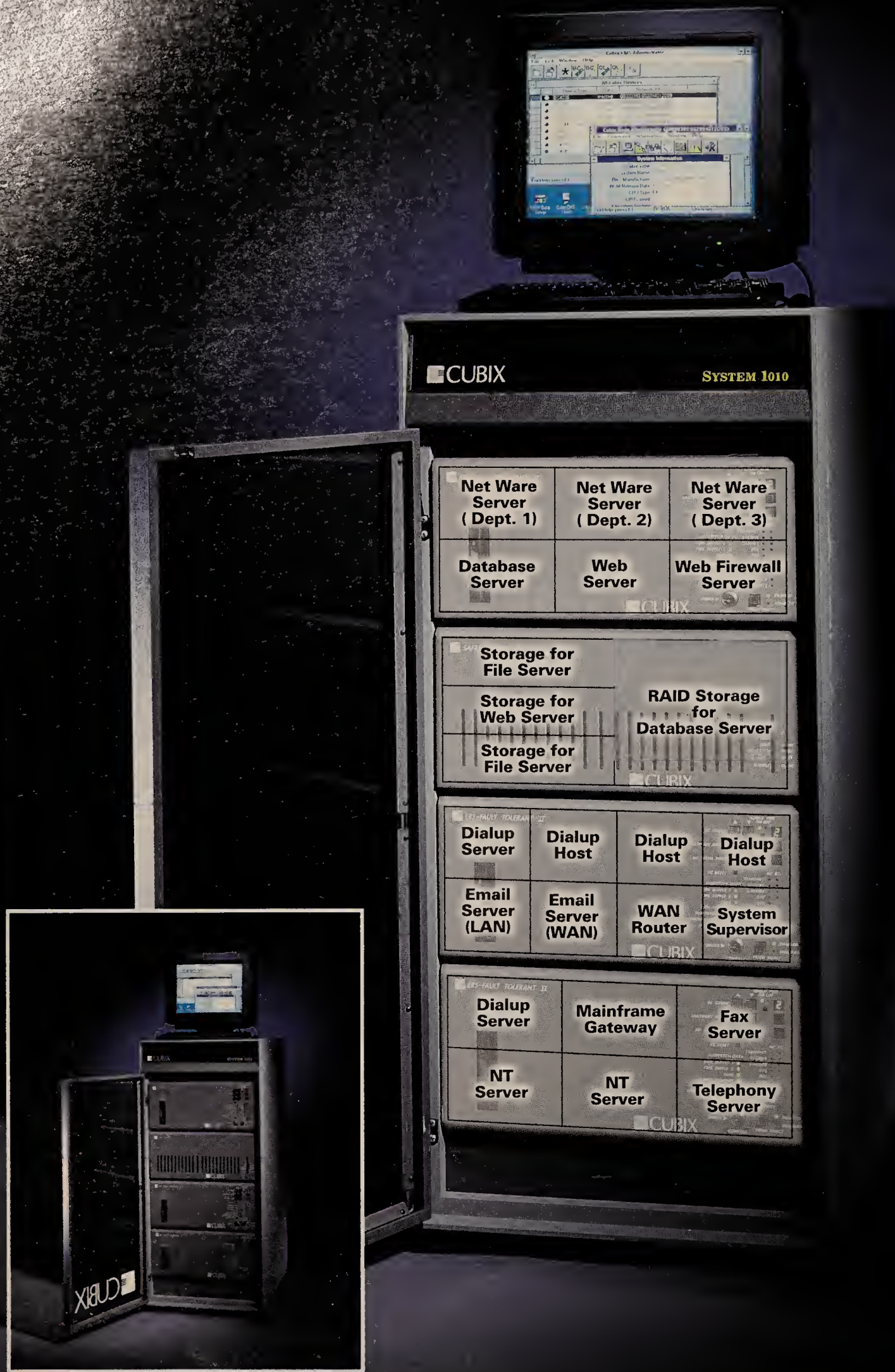
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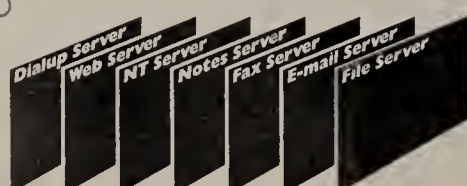
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### Relay Racers

are leading-edge users and are first to deploy new networking products and high-end applications. They are responsible for a division of a very large organization, and successful deployment of technology in their division often leads to a passing of the baton, which means widespread deployment by the rest of the organization.



### Marathoners

are aggressive users of technology but not quite as leading-edge as the Relay Racers. They are responsible for entire large organizations that have mainframes, which will remain a central part of the infrastructure. They need to cover a lot of distance to get from their mainframe-based starting point to their intended client/server finish line.

### 10K Runners

deploy technology when it makes sense, not in a race to build a bigger or faster network. Typically responsible for both networking and computing for their midsize organization, 10K Runners are more cautious than Relay Racers when specifying technology since it represents a large investment to their organization.



### Sprinters

are leading-edge users from smaller organizations. They don't have mainframe-based legacy systems to maintain and, therefore, have a shorter distance to go to reach their goal of deploying a client/server-based architecture. They have aggressive technology plans and are likely to rely on the recommendations of consultants.

In the technology race, *Network World* readers are all volume buyers of network products and services. For a more detailed look at the study results, please **contact your *Network World* sales representative or call Virginia Lehr at (508) 875-6400**.



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**Heather Fairbanks, Account Executive**  
Covering the Midwest territory,

Heather comes on board as Direct Response Account Executive for *Network World's* Marketplace and Response Card Decks.

**Ben Heskett, Staff Writer**

Ben has been hired as Staff Writer for *Network World's* Local Networks section. He will cover servers, LAN management and certain storage/back-up issues.

**Mike Hiatt, District Manager**

Mike is *Network World's* new Mountain Region District Manager and is based in Provo, Utah. He joins us from his previous position as Manager of Media Services at Novell.

**Tarji Murray, Networking Careers Sales Associate**

*Network World* welcomes Tarji as Sales Associate for our Networking Careers department. Tarji will be assisting with sales presentations, prospecting and marketing.

**Cynthia Schaeffer, District Manager**

Joining *Network World* from Reseller Management, Cynthia assumes the role of District Manager for the Bay Area and the Northwest.

**Carol Sliwa, Senior Writer**

*Network World* welcomes Carol as Senior Writer for the Client/Server Applications section. She is responsible for covering groupware and messaging.

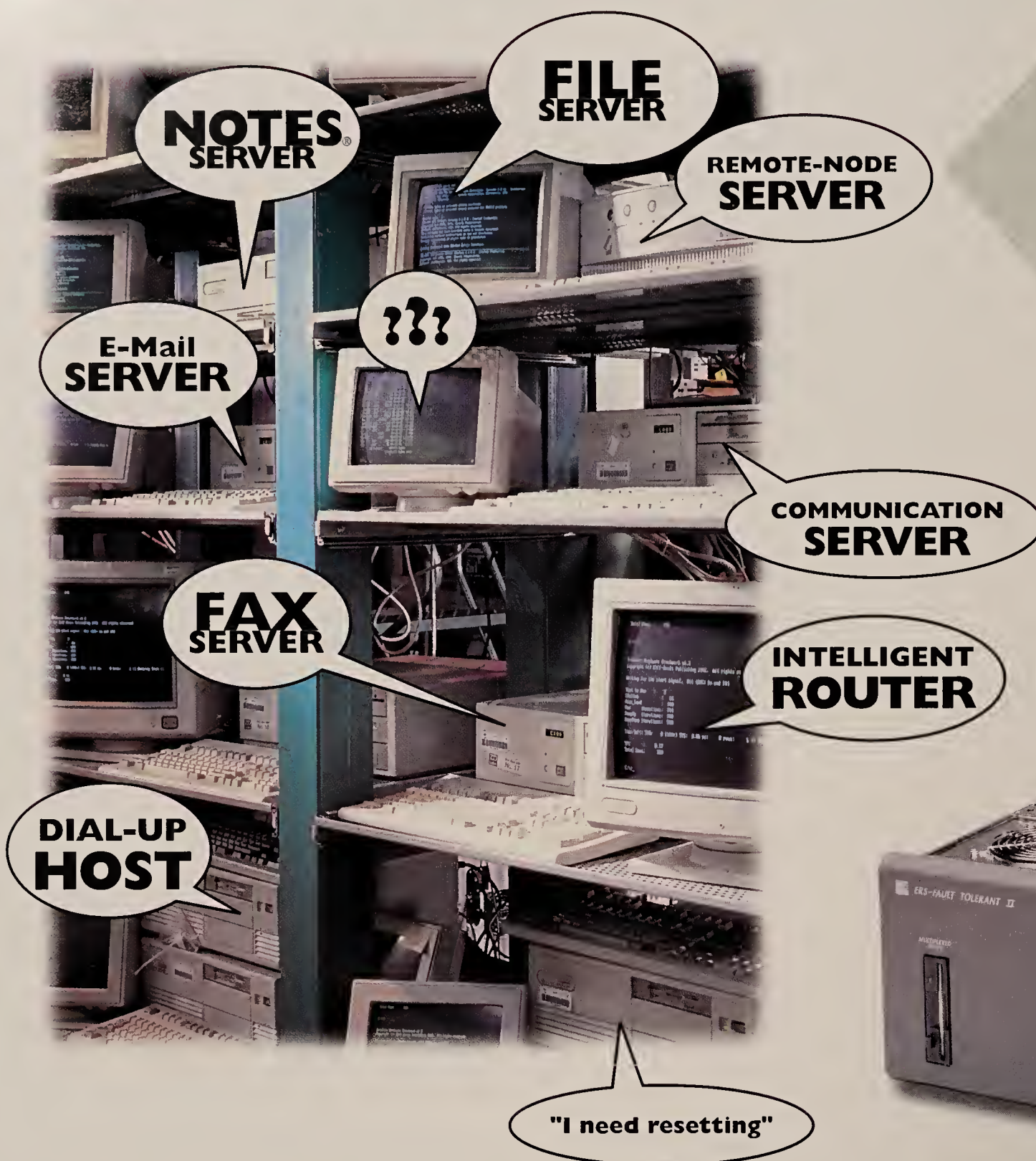
### CONGRATULATIONS ON YOUR PROMOTIONS!

Eleni Brisbois, Sales Associate  
Barb Cole, Senior Editor  
Sandra Kupiec, Western Regional Manager  
Greg Morgan, Production Supervisor  
Clare O'Brien, Sales Manager, Direct Response Advertising  
Susan Pulaski, Assistant Art Director  
Carol Stiglic, Inside Sales Representative

See inside back cover of this wrap for *Network World's* upcoming editorial schedule!



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